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# Welcome

to the November issue  
of *Woodworking Crafts*



## Remember, remember it's nearly December...

**H**ello everyone and welcome to the November issue of *Woodworking Crafts* magazine. I don't think it is sexist to suggest that wives and partners are rather more organised when it comes to the matter of Christmas than us men? My wife starts buying presents at least a year ahead and with specific recipients in mind. Nothing is unplanned, a list is ticked off as interesting and unusual presents are bought during the year and dare I say it, at keen prices too. Us chaps, let's face it, don't do shopping – unless it's on 'tinternet.

So, it's always an unseemly rush for the credit card at the last moment, last ditch 'shop' shopping you might say. Maybe this is when we actually need to make a resolution – buy or better still – make early for Christmas. We have a project this month for making Christmas tree ornaments, but in all our issues there are some easy projects from bird boxes to carved spoons to shelving and much more besides, all of which could make attractive, unique and much appreciated presents instead of the usual shop-bought nonsense. So go on, you know it makes sense, get making now while there is still time!

*Anthony Bailey*

Anthony Bailey, Editor  
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# Shaker blanket chest

In this extract taken from *Chests and Cabinets*,  
**Charles Durfee** makes a Shaker blanket chest

**T**he earliest storage chests were simple boxes made of six boards. As they evolved, a base, or plinth, was added to lift them off the floor and give them aesthetic appeal. Although moulding the edges created a more finished look, anyone who used such a chest soon found that they had to fish around for small items that ended up on the bottom. To solve this problem, furniture makers added first one drawer, and then two or even three drawers. Finally, the lid was eliminated, leaving a full chest of drawers as we know it today.

During the evolution from blanket box to chest of drawers, the grain in the sides changed from horizontal to vertical. Many of the single-drawer versions exhibit an intermediate stage in this evolution, with vertical grain in the sides nailed to horizontal grain in the front, which probably is the only way they could be joined. In this piece, the older style with all horizontal grain is retained, which enables the front, back and sides to be joined

with dovetails. As long as the sides don't get too tall, this is a superior form of construction: Seasonal wood movement results in the parts moving together, instead of against each other.

## Match the dimensions to your hand-picked boards

Although the Shakers probably would have used painted pine (*Pinus sylvestris*), modern woodworkers may prefer the natural look of fine wood. I used some excellent single-log Pennsylvania cherry (*Prunus serotina*) with lots of curl, nicely matched in grain and colour.

You may need to adjust the overall dimensions if you want to use specific boards in particular places. I made the overall height a bit less than planned so that I could use an exceptionally fine single-width board for the front. You can lay out the actual dimensions on a story stick, using one face each for height, width and depth. The story stick will give you all of the information necessary to begin construction, so you

won't need any drawings.

After double-checking to ensure planning and layout make sense, mill and glue the boards for the front, sides, back, top, and drawer front. Leave the inner bottom oversize; it should be sized to just fit into its grooves. In addition, you can make up the bottom frame-and-panel. Remove any dry excess glue and flatten the boards using planes or sanders and a straightedge. To save time, I take the parts to a local mill shop and run them through a thickness sander. With the case front, back, and sides cut to size, run the grooves for the inner bottom – on the front, the groove technically is a rabbet. The grooves need to be stopped before the ends and carefully aligned from the top so that all four grooves match up. I use a  $\frac{3}{4}$ in straight bit in a plunge router and run the tool against a straightedge to ensure a straight cut. Make the rabbet for the frame-and-panel bottom in the same fashion, stopped at the rear corners only. ➤



Top,  $\frac{3}{4}$  in. thick by  $18\frac{5}{8}$  in. wide by  $38\frac{1}{4}$  in. long, not including molding

Inner bottom,  $\frac{3}{4}$  in. thick by  $17\frac{7}{16}$  in. wide by  $36\frac{7}{8}$  in. long, glued at front only

The side molding on the top slides on dovetail keys and is glued only at the miters (see detail).

#### TOP-MOLDING DETAIL

The molding consists of a half-round and a cove glued together and attached to the chest lid.

Key,  $\frac{1}{4}$  in. thick by  $\frac{1}{2}$  in. wide

Half-round molding,  $\frac{7}{8}$  in. thick by  $1\frac{1}{8}$  in. wide

Cove molding,  $\frac{1}{2}$  in. by  $\frac{1}{2}$  in.

Back,  $\frac{3}{4}$  in. thick by  $21\frac{1}{4}$  in. tall by 38 in. long

Cedar lining,  $\frac{1}{4}$  in. thick

Stopped groove in each side,  $\frac{3}{16}$  in. deep by  $\frac{3}{4}$  in. wide

Rabbet,  $\frac{3}{8}$  in. deep by  $\frac{3}{4}$  in. wide

Stopped groove,  $\frac{3}{8}$  in. deep by  $\frac{3}{4}$  in. wide

Bottom frame,  $18\frac{1}{8}$  in. wide by  $37\frac{1}{4}$  in. long

Panel,  $\frac{1}{2}$  in. thick, with  $\frac{1}{4}$ -in.-thick by  $\frac{3}{8}$ -in.-wide tongues

Sides,  $\frac{3}{4}$  in. thick by  $18\frac{1}{2}$  in. wide by  $21\frac{1}{4}$  in. tall

Base front and back,  $\frac{3}{4}$  in. thick by 5 in. wide by  $39\frac{1}{2}$  in. long

Cleats,  $\frac{3}{4}$  in. sq., screwed to base and bottom frame

Frame,  $\frac{3}{4}$  in. thick by 2 in. wide, with  $\frac{1}{4}$ -in. by 1-in. tenons

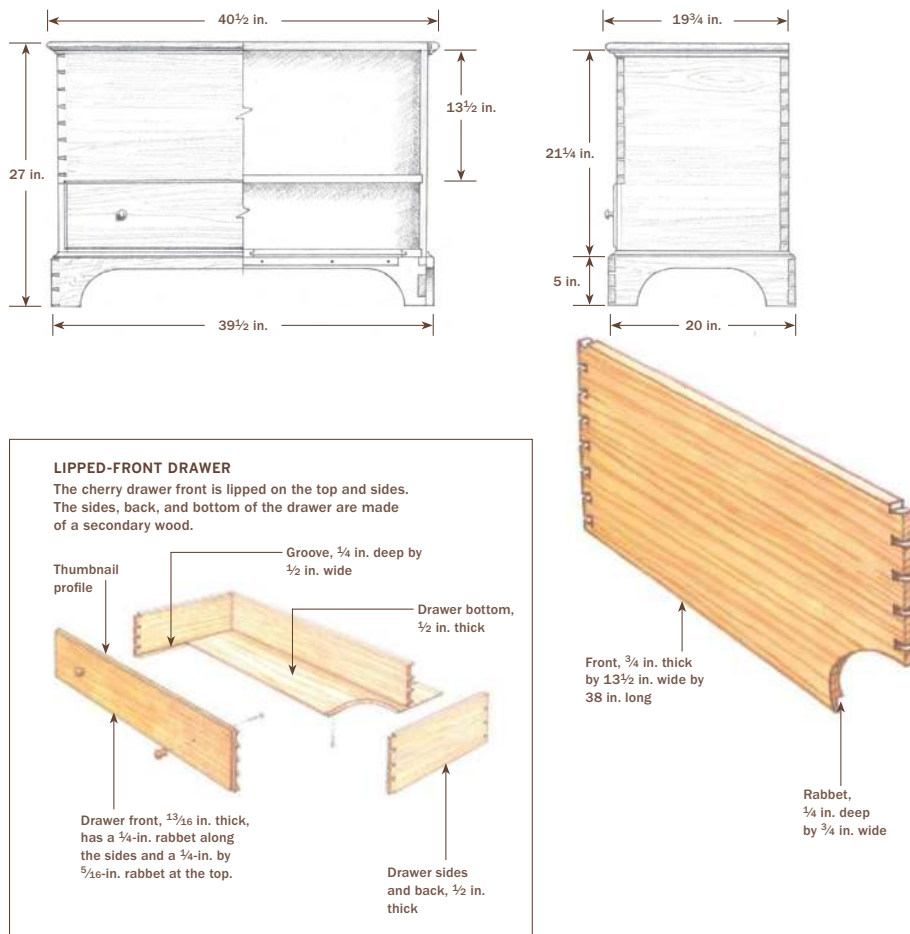
Base sides,  $\frac{3}{4}$  in. thick by 5 in. wide by 20 in. long

Trim pieces,  $\frac{1}{2}$  in. thick by  $\frac{3}{4}$  in. wide by  $7\frac{1}{2}$  in. long



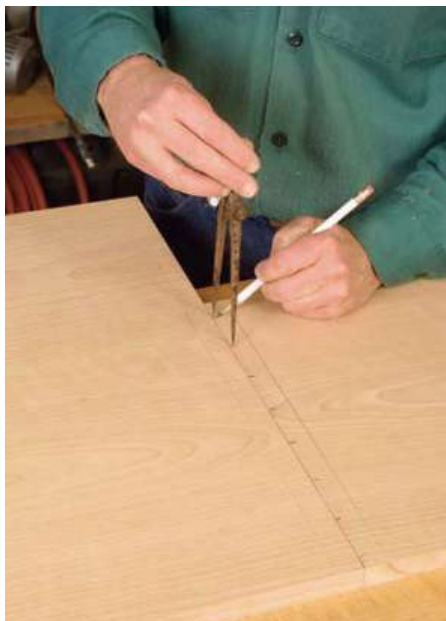
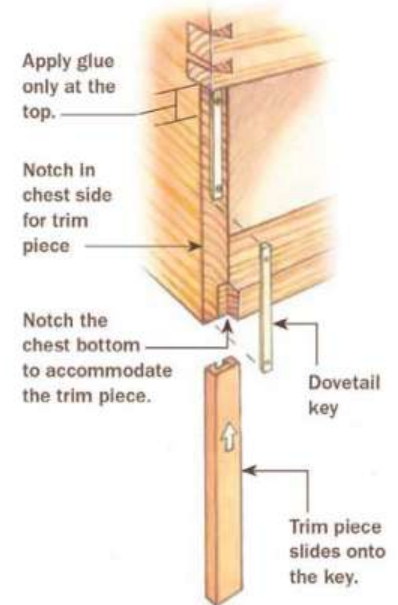
## Dovetailed blanket chest with a drawer

Because of the drawer, the front corners have fewer details than the rear corners. The dovetail spacing may be slightly different on the back than on the front but should appear to be the same.



### Trim pieces hide the end grain

Trim pieces are attached with sliding dovetail keys that allow for seasonal movement. The pieces stop short of the bottom by  $\frac{1}{4}$  in, with the gap concealed by the cove moulding of the base



Lay out the dovetails. Use a pair of dividers to lay out the dovetails evenly. The spacing on the front corners may need to be slightly different from the spacing on the rear due to the presence of the drawer



Extend the layout to the end of the board. After marking the tails on the face of the board with a sliding bevel, extend the lines across the end of the board using a square and a knife. The knife cuts will help guide the saw as you cut

## Construct the carcass with dovetails

There are a lot of dovetails to cut in this project, so you might as well decide on a method of cutting them and stick with it. If you use a router setup, make sure the jig can handle the long row of the rear corners or has a way to index setups. I cut the dovetails with hand tools, which mostly is an exercise in marking and sawing accurately.

When laying out the joints, aim for a spacing between pins of about  $1\frac{3}{4}$  in on-centre. This chest has the peculiar problem of the front and back rows being different lengths, due to the drawer opening. Try to have the front series end with a small half pin or a small half tail, for appearance's sake. Make your scribe marks on the front edge of the sides down to the drawer opening only.

When cutting the dovetails, orient the outside face of the side toward you. Begin sawcuts at the top back corner; come across the top edge to set the ➤



saw in and then down the front face at an angle, keeping the saw completely in the kerf. Then finish the cut by raising the handle gradually. To ensure the cut is made to its full depth, I follow an old-timer's practice of cutting slightly past the scribe on the back side. After cutting the tails, check that they are square and do any necessary paring. In this way, any adjustments to get a good fit are done on only the pins.

## Use the tails to mark the pins

When marking from one part to the next, make sure the front and back are perfectly square to each side and that the grooves line up so that the inner bottom will be able to slide in. I use a very sharp pencil lead extended from a lead holder for marking. It leaves a fine line, is much easier to see than a knife scribe, and doesn't accidentally cut the tail. With the case dovetailing done, cut the recesses for the trim pieces on the lower front edges of the sides.



Line up the boards. Before laying out the pins, ensure that the boards are flat and meet at 90°



Mark the pins from the tail. With the boards secure, use a sharp pencil to transfer the location of the pins. A torch helps you see into the corners

## WHEN THINGS GO WRONG WITH YOUR DOVETAILS

Hand-cut dovetails should not be perfect and indeed rarely will be. However, some faults that occur during fitting or assembly need to be repaired because they detract from the overall appearance of the piece.

### When a test fit cracks the wood

When dry-fitting dovetails, it takes only one too-tight pin to cause a crack. This needs to be repaired before the two boards are dovetailed together. It's difficult to force glue down into the crack, but by placing the board half hanging off the bench and then flexing it while pushing the glue into the crack with your finger, you can work the glue in from both sides until the joint is saturated. Place waxed paper over the joint to protect the clamp that keeps the two sides of the crack parallel, and then place another clamp across the board to pull the crack together.



Repair a crack. While flexing the board up and down, force glue into the crack



Use one clamp to keep both sides of the crack aligned, with waxed paper between the glue and clamp, then close the crack with another clamp across the board

### Unsightly gaps between pins and tails

Don't despair if there are gaps on either side of the pins and tails. If the gaps are very narrow, you can repair them by inserting some glue and peening the tail or pin with a ball-peen hammer. The blows spread out the end grain until it fills the gaps. This method requires that the tail or pin protrude at least  $\frac{1}{16}$ in because it will be necessary to plane away the crushed surface end grain.



If the gaps are wide, the best way to fill them is by tapping in a thin wedge lubricated with a little glue. After the glue has dried, saw off the protruding part of the wedge and smooth the surface with a block plane. The end grain of the wedge will be an almost perfect match with the pin or tail.



Peen small gaps. Small gaps can be filled by inserting a little glue and then hitting the pin or tail with a ball-peen hammer. Do this before planing the pins flush so that the hammer marks can be removed



Shim larger gaps. A narrow wedge driven into the gap beside a pin will make an almost invisible end-grain repair



## Assemble the chest in stages

**1** Gluing the many dovetails is stressful enough without trying to do all of them at once. Before you start, make some cauls on the bandsaw to fit over the protruding pins. First glue the front to the sides and slide in the inner bottom, gluing the front edge into the rabbet and allowing the rest to float.

**2** When this first assembly has dried, glue on the back, again using the cauls.

**3** When the back is dry, fit and glue the frame-and-panel base into the bottom rabbet.



## Dry-fit the carcass before final assembly

When dry-fitting the case parts, push the joints together as much as possible by hand, then use a rubber mallet. When the joints are almost there, resort to clamps. You walk a fine line when fitting exposed dovetails: Too tight, and you risk splitting the wood; too loose, and you leave gaps between the pins and tails. Fortunately, the splits and gaps can be fixed.

For the glue-up, I make special clamp cauls to span the pins because they protrude somewhat. To make the glue-up less nerve-racking, break down the process into steps. Assemble the front, the two sides, and the inner bottom as a unit first. The front edge of the inner bottom is glued only to the front rabbet – the rest is left unglued to allow for seasonal movement. If necessary, cut a temporary spacer to hold the rear edges in the correct alignment. The second step is to glue on the back. When the back is dry, fit and glue the base frame into the bottom rabbet. ➤

## Cap the end grain

To conceal the end grain, the sides are notched adjacent to the drawer, and trim pieces are attached over dovetail keys.

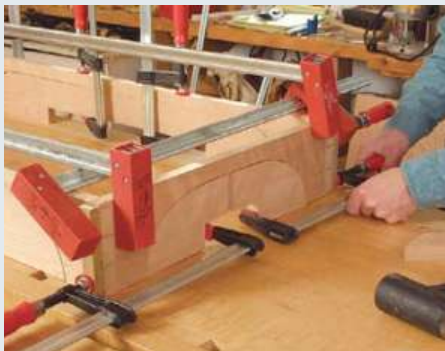
**1** After assembling the case, notch the case bottom where it intersects the sides.

**2** Then screw the dovetail key to the case using the trim piece to aid alignment.

**3** Finally, saw apart the key to allow for seasonal movement of the case. Glue the trim piece only at the top.







**STEP 1:** Save the waste. After cutting the profile of the base, save the offcuts, which can be cut in two and used as clamping cauls when gluing together the base

## Conceal the end grain with trim pieces

With the carcass assembled, cut a notch in the base frame at each front corner for the trim pieces. On original Shaker chests, these trim pieces as well as the mouldings were simply nailed on, which not only caused seasonal wood-movement problems but also were aesthetically unpleasing in an unpainted piece. A more elegant solution is to attach these cross-grain



**STEP 2:** Attach the cleats. Screw cleats to all four sides of the base. Then drive screws up through each cleat to attach the base to the chest

parts with sliding dovetail keys. I vary this method slightly, screwing the key on beginning at the inboard end and pulling off the moulding, fastening as I go. The segments are cut out and the moulding slid back on with glue at the inboard end. Leave the bottom end of the trim pieces about  $\frac{1}{4}$ in short of the case bottom to allow for seasonal expansion. The cove moulding will cover the gap.

## Build the base and the top before attaching the moulding

On this chest, the base runs around all four sides, as opposed to most Early American chests, which have bracket bases on the front and sides only. Saw the dovetails first and then cut out the profile on the bandsaw; you can save the cutouts to use as clamp cauls. Nail a plywood template to the back of the base pieces and clean up the profile on the router table with a top-guided bearing bit. Screw cleats to the inside of the base and drive screws through the cleats to attach the base to the chest.

Because the mouldings overlap the top edge of the case, the top should be sized so that the front clearance is proportional to the amount of seasonal wood movement. I built this chest in the winter, and the wood's moisture content was 6%, so I sized the top with a minimal clearance of a strong  $\frac{1}{16}$ in –  $\frac{3}{16}$ in to  $\frac{1}{4}$ in should be sufficient clearance for a summer-built chest.

The top moulding consists of a half-round and a cove made on the router table and then glued together. While you're at it, make some extra cove moulding for the base. The front piece

is mitred and glued to the top, while the sides are installed over dovetail keys, with glue at the mitres only.

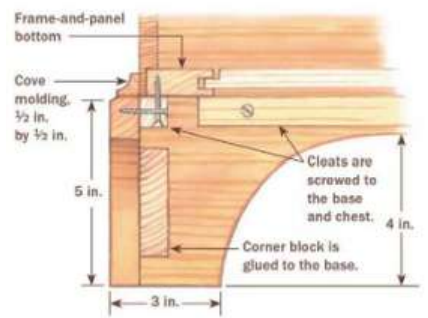
The drawer front is in the traditional style, lipped on the top and sides and moulded all around. The sides and back on my drawer are quartersawn pine, and the bottom is poplar. You can find quartered stock at any lumberyard – just look through a stack of boards for ones with growth rings perpendicular to the board's face.

Cut the drawer front first, with its side rabbets trimmed so that they just fit into the opening. The top rabbet needs to have only about  $\frac{1}{16}$ in of clearance because seasonal movement of the drawer will be in the same direction as the case. Cut the dovetails by hand, but use a Forstner bit to drill out the bulk of the waste between the half-blind pins.

## Attach the hardware and finish the piece

By now you will have something that looks like a chest. The top is secured with mortised-in butt hinges. I used extruded-brass hinges from Whitechapel – [www.whitechapel-ltd.com](http://www.whitechapel-ltd.com) – but you may opt for a more

## Install the bracket base



**STEP 3:** Fit the moulding. Because the grain on the chest runs horizontally, the base moulding can be glued to both the base and the sides

authentic style with thinner leaves. When the top is fastened, find the location for the stay. I used a brass chain, which isn't strictly traditional Shaker but still shares a similar simplicity.

Throughout the construction process, you should have been planing, scraping and/or sanding to all but the final passes. I generally take out machine marks – including the tracks left by the thickness sander – with a handplane and scraper. The final work is done with a 220-grit disk in a random-orbit sander. I used Minwax® Antique Oil Finish, but any oil/varnish mixture will work well. ■

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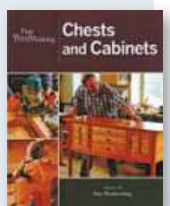
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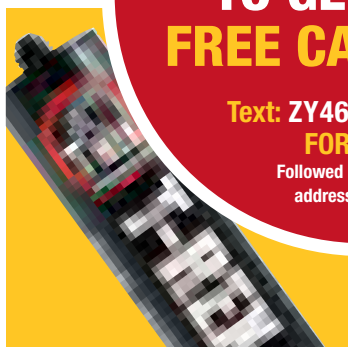
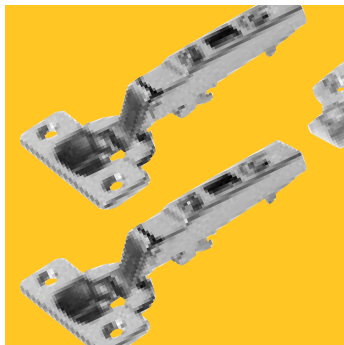
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# NEWS & EVENTS

All the latest events and news from the world of woodworking...

## European Woodworking Show



PHOTOGRAPHS COURTESY OF GMC/ANTHONY BAILEY

Steve Woodley on top form dividing the trunk side before smoothing with a side axe



Above: One of Lenka Pavlickova's distinctive puppets in a running pose

Left: Inside the vast wheat barn at Cressing Temple where there were plenty of tools and supplies on sale

The much anticipated European Woodworking Show, courtesy of Classic Handtools was held 12-13 September, 2015 at Cressing Temple, Essex. It was extremely busy on the Saturday, while Sunday was a little bit quieter but more pleasant perhaps to wander around. There was a very wide variety of demonstrations, talks and trade stands to choose from. As always it was good to see Nic Westermann forging an axe head, ably assisted by *Woodworking Crafts* green woodworking contributor Lee Stoffer. Then you could watch Steve Woodley smooth-squaring beams with a side axe, there was carving aplenty, including EWS stalwart Lenka Pavlickova with her spooky puppets, Sophie Heron and her converted VW 'Volkwooden' camper van – off George Clarke's *Amazing Spaces*, Fiona Kingdon's complex scrollsaw work... honestly, the list was endless, with far too much to enter here. Definitely a show to add to your calendar but watch this space advertising the 2017 Show, as it will be a biennial event. Certainly this time it was well worth waiting for, a great day out and definitely a 'feel good' event!



Nic Westermann demonstrating the stages in forging an axe head from a blank piece of steel



# National Tradesmen Day Final

IRWIN® Tools announces the winner of the 2015 National Tradesmen Day competition. Stacey Greenwell from Stoke-on-Trent impressed the expert judging panel with his dedication to the community. He was nominated for his commitment to rejuvenating, what would be derelict areas of town, in order to provide homes and jobs for those in need. He was one of hundreds of nationwide nominations and beat five other finalists to be crowned 2015s Ultimate Tradesman. As this year's winner, Stacey will drive home a brand new Ford F150 4x4 truck worth over £35,000.

Michael Potter, Associate Brand Activation Manager, IRWIN Tools EMEA commented: "The competition for this year's National Tradesmen Day was fierce but the judging panel felt that Stacey's positive impact on the community and his drive to go above and beyond his daily role, really made him stand out. Our society relies heavily on the good work of tradesmen and women but their efforts are sometimes overlooked. National Tradesmen Day aims to raise the profile of these people working behind the scenes and Stacey was very deserving of the title this year."

Winning tradesman, Stacey Greenwell commented: "I'm so thrilled to win the National Tradesmen Day



competition. It feels good to know the work I do is appreciated and this award is a testament to the great team of individuals I work alongside. I never win anything and I know my family will be really proud."

35-year-old Stacey Greenwell started his career as a Ceiling Specialist 14 years ago and now owns a successful business which he runs alongside a whole host of renovation projects. These projects involve finding and restoring residential properties to their former glory, creating new homes for local families. He also offers jobs to those struggling to find employment, giving them the opportunity and skills needed to follow a rewarding career path. He is well respected within the



industry and has become an integral part of his community.

National Tradesmen Day is a global initiative that continues to champion men and women who make a real difference through their work. IRWIN Tools continues to celebrate this invaluable workforce and encourage a new generation of talented individuals.

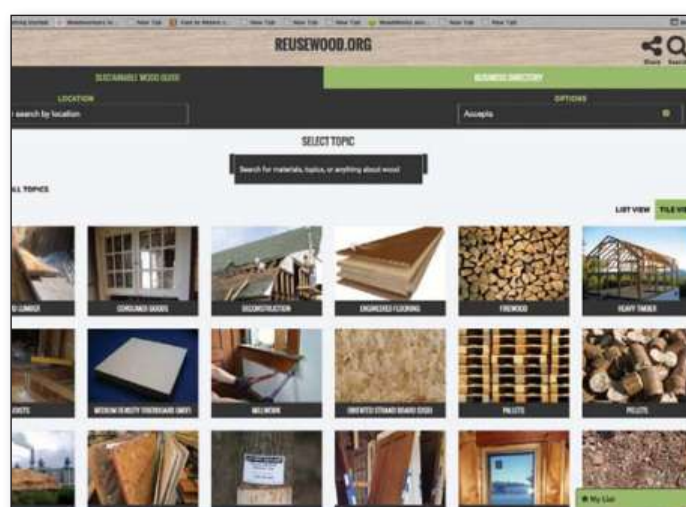
**Contact:** IRWIN Tools  
**Web:** [www.irwin.co.uk](http://www.irwin.co.uk)

## New website tells you exactly how and where to recycle wood

What happens to wood at the end of its life? The American and Canadian Wood Councils have answered the question, by launching [www.reusewood.org](http://www.reusewood.org). It is a resource that not only explains what each item is and what it is good for in a second life, but upon entering your postal or zip code, will inform you who will take it off your hands!

The website not only provides homes for end-of-life wood, but within its 'all topics' button, sits a wood encyclopaedia. It looks at everything from Architectural Salvage to Woodworking. There is also a business directory accessible by map and individual listing pages. Salvaging and reusing wood and wood-based products ultimately reduces waste, therefore lessening the impacts associated with extracting and processing resources. A considerable amount of wood used in construction – such as formwork and bracing – or in a demolition, can be salvaged and reused.

The choice of products used to build, renovate and operate structures has a significant impact on the environment. When specifying any materials, it is important to consider their life cycle environmental impacts. Wood products have less embodied



A clever and well designed website to help you recycle your unwanted wood

energy, are responsible for lower air and water pollution, and have a lighter carbon footprint than other commonly used building materials.

For more information, visit: [www.reusewood.org](http://www.reusewood.org)

[CREDIT] IMAGE COURTESY OF REUSEWOOD.ORG



## Green Wood Workshop

Courses in willow weaving, coppice crafts, hurdles, hedgelaying, green woodwork, chairs and bench making, trugs and more! Commonwork at Bore Place is home to the Green Wood Workshop, which offers courses throughout the year from its fully equipped workshop on site or nearby Bore Place woodlands. Courses are run on an informal basis and are led by experienced tutors who make all or part of their living from the woods. A wide range of scheduled courses are offered for all levels of experience and in addition, courses can be arranged for groups and designed to suit your particular requirements.

**Where:** Commonwork, Bore Place, Chiddingstone, Kent, TN8 7AR  
**Contact:** John Waller  
**Email:** [info@underwoodsmen.co.uk](mailto:info@underwoodsmen.co.uk)  
**Web:** [www.commonwork.org](http://www.commonwork.org)

## The North of England Woodworking & Power Tool show 2015

The North of England Woodworking & Power Tool show is the largest and longest established retail woodworking show in the country and is a terrific day out for its thousands of visitors.

For 2015, there will be an excellent line-up of demonstrators with more than 40 taking part covering every discipline. You can expect to see demonstrations from woodturners including Stuart Mortimer, Andrew Hall, Michael Painter and *Woodturning* magazine Editor, Mark Baker.

**When:** 20-22 November, 2015  
**Where:** Hall 1, Great Yorkshire Showground, Harrogate, North Yorkshire HG2 8NZ  
**Web:** [www.skpromotions.co.uk](http://www.skpromotions.co.uk)



Three days. Over 120 makers. The ultimate shopping treat

## Handmade in Britain

This Christmas, avoid the high street and opt for handmade at Handmade in Britain '15, the annual showcase of the very best of contemporary British craft and design at Chelsea Old Town Hall. Browse exceptional crafts, buy unique and original gifts or commission a bespoke piece of work directly from over 120 of the UK's finest designer-makers, each handpicked by a panel of industry experts.

The show is a wonderful opportunity to shop for exquisite ceramics, glass, furniture, textiles, jewellery and silverware in a beautiful, historic venue. Makers will be on hand throughout the weekend to talk to you about their work and showcase their collections, inviting you to learn how your favourite pieces are made and to discover the story behind that perfect gift. On Saturday evening headline sponsor Home of Artisans will be hosting an exclusive late night shopping event, giving visitors the opportunity to enjoy browsing in a relaxed and festive atmosphere until 8pm.

**When:** 13-15 November, 2015  
**Where:** Chelsea Old Town Hall, Kings Road, London SW3 5EE  
**Contact:** Handmade in Britain  
**Tel:** +44(0) 207 2865 110 **Web:** [www.handmadeinbritain.co.uk](http://www.handmadeinbritain.co.uk)

## Helsinki Forest Fair/Metsä

Promising to be a warm and friendly weekend, the Helsinki Forest Fair attracts people from Helsinki Metropolitan Area to get to know five different events – when, at the same time, you can visit ELMA Helsinki Food & Countryside Show, Helsinki Forest Fair, Arts&Crafts Fair, OutletExpo and Pets! Last year this combination of events attracted more than 46,000 visitors.

It is an event for the forest owners, forestry professionals and people who are interested in the forest. Helsinki Forest Fair/Metsä takes place in Helsinki, Finland from 6-8 November, 2015 at Helsinki Exhibition and Convention Centre.

**When:** 6-8 November, 2015  
**Where:** Helsinki Exhibition and Convention Centre, Helsinki, Finland  
**Contact:** Messukeskus  
**Web:** [www.messukeskus.com](http://www.messukeskus.com)







PHOTOGRAPH BY GMC/ANTHONY BAILEY

## Woodworkers Workshop Hand Tool Day

Woodworkers Workshop are having a Hand Tool Day, so why not visit the workshop, meet Peter Sefton and see professional demonstrations. There will be loads of tools for sale alongside hand tools sourced from some of the best English tool makers, plus you can get expert advice on buying tools and Peter will be demonstrating Hand Tool techniques.

On Saturday 28 November, 10am-4pm, they believe they have the best in-house routing demonstrations set-up in the UK and see expert demonstrations from quality imported US Brands such as WoodRiver – exclusive to Wood Workers Workshop – Incra, Woodpecker and Easy Wood Tools. You can get expert advice on buying tools and Peter will be demonstrating Hand Tool techniques.

**When:** 28 November, 2015

**Where:** The Threshing Barn, Welland Road, Upton Upon Severn, Worcester, Worcestershire, WR8 0SN

**Contact:** Peter Sefton

**Web:** [www.peterseftonfurnitureschool.com](http://www.peterseftonfurnitureschool.com)

## The Woodworkers Institute web forum



Why not join in the discussions on all matters woodworking on the Woodworkers Institute web forum? Covering all four GMC woodworking titles, including Woodcarving, you can view the work from fellow craftsmen, exchange useful hints and tips, or join in on the hot topic of the day on the live forums. To register, simply log on to [www.woodworkersinstitute.com](http://www.woodworkersinstitute.com), click the register button, and follow the instructions.



## WOODWORKING IN THE NEWS

### Saving the endangered Japanese birch

The Forestry Commission's experts have successfully germinated seeds of the Japanese birch (*Betula chichibuensis*) at National Pinetum at Bedgebury, near Goudhurst in Kent. The seeds were collected last year from one of the world's most critically endangered tree species, so rare that only 21 were recorded to have grown in the wild in 1993. The Japanese birch is listed as critically endangered by the International Union for the Conservation of Nature (IUCN). It is the first time in nearly 30 years that anyone has succeeded in germinating seeds of the Japanese birch, and their success boosts hopes that the species can be saved from extinction.

Dan Luscombe, dendrologist at Bedgebury, said: "I consider myself very fortunate to have seen such critically endangered species in the wild. However, to be part of the team that can make such a significant contribution to securing the survival of a species in the wild is really exciting and rewarding.

"Propagation from seed collected from trees growing in the wild is essential to the future of endangered species, because this retains their genetic diversity. This helps make the species resilient to threats such as pests, diseases and climate change. If we only grew plants from cuttings from our own collections we'd simply produce a clone." Luscombe continues: "We face lots of challenges on a seed collecting expedition, such as remote and difficult locations, limited and infrequent fruiting times, adverse weather conditions and permits. So this successful germination is particularly exciting, and a credit to the combined knowledge and skills of the group.

"The seedlings will be grown on at Bedgebury and, once they are strong enough, some will be added to the collection at Bedgebury Pinetum and others will be shared with Oxford University. The remaining seeds will be stored in the Millennium Seed Bank at Wakehurst in West Sussex. Distributing them to different sites minimises the risk to the collection and leaves open the option of returning some seeds or seedlings to Japan for planting out in the wild if conditions there are right."

**Contact:** Forestry Commission

**Web:** [www.forestry.gov.uk](http://www.forestry.gov.uk)



IMAGE COURTESY OF WIKIPEDIA COMMONS

The Japanese birch



# BOOK REVIEWS

We review three books for you to enjoy

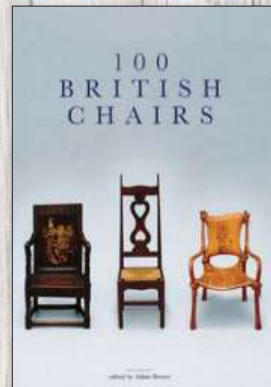
## 100 British Chairs

Edited by Adam Bowet

*100 British Chairs* is comprised of plates from a collection of encyclopaedic tomes from the Antique Collector's Club, all of which are worthy of a place in your workshop library. Largely a picture led book, it makes a good handy sized reference of design history. Divided chronologically into 14 chapters, it spans 450 years. There's not a great deal of text so don't expect a complete breakdown of each item. What you can expect is a description of each style as it relates to a particular period. At 143 pages, it's more than a greatest hits compilation.

It may be the case that Britain didn't make that many chairs of note between 1905 and 1990 because the chapter listings jump from 'Arts & Crafts Chairs, c.1885-1905' to 'John Makepeace Chairs 1990'. There might be someone else from High Wycombe out there that could pen that chapter for the revised edition.

Despite this, however, it's still a good volume and more indicative perhaps of an establishment finding it hard to accept Mid-Century Modern as a relevant contribution to the overall story of British Chairs.



ISBN: 9781851497973

Price: £25

Web: [www.antiquecollectorsclub.com](http://www.antiquecollectorsclub.com)

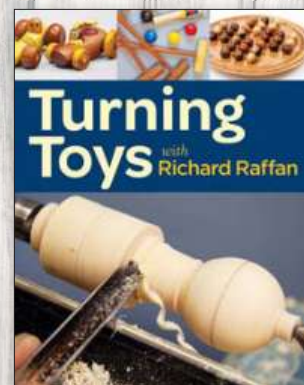
## Turning Toys with Richard Raffan

by Richard Raffan

*Turning Toys with Richard Raffan* is a fun glossy book with 18 great projects, which would all make brilliant gifts for young children! Each project is a traditional toy design and each demonstrates an essential skill-building technique, with step-by-step high quality photographs and drawings to help you along the way. With his clear instruction, Richard aims to 'help you work smarter and faster to produce better work, no matter what you're turning'. The text throughout is in large print, which is exceptionally useful while reading it in the workshop!

Not only does Richard provide these 18 fun projects, but he also tells you precisely how to choose the correct tools and wood for your work; solve and avoid common turning problems; select easy and safe finishes for your toys and more. There are safety boxes scattered throughout the guide, which one should be sure to take note of.

Before Richard gets into the projects, and after a short introduction and overview, the author looks at the basics of turning cylinders, dowels and wheels, and most importantly workshop safety. Following on from these chapters, are the projects. These include; wheely bug; racing car; peggies; wands; stackers; spheres; fruit and vegetables to 'cut'; a croquet set; teether and rattle; nesting tubs; a goblet; bilboquet; spinning tops; balance tray; and table skittles. There is certainly a toy for every child in Richard's book!



ISBN: 9781621130109

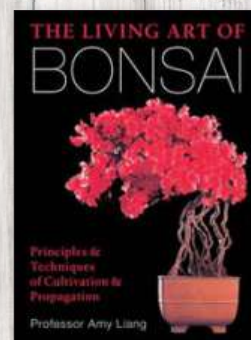
Price: £16.99

Web: [www.gmcpubs.com](http://www.gmcpubs.com)

## The Living Art of Bonsai

by Professor Amy Liang

If you're looking for some inspiration, or you're considering taking up a new miniature hobby, don't overlook the humble bonsai. This book acts as both a comprehensive introduction to the art and a compendium of tips and techniques for those with a well-cultivated bonsai hobby. Full of large, clear photographs of miniature trees and whole miniature landscapes, there's no end of inspiration for Oriental-style gardens and wonderlands. *The Living Art of Bonsai* also includes the science behind how to care for these tiny trees, and the history and culture behind the practice. This is a fascinating read, and the images are sure to spark your imagination and inspire you to create your own.



ISBN: 9781454912217

Price: £17.99

Web: [www.sterlingpublishing.com](http://www.sterlingpublishing.com)







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# Small sliding lid box

Our American correspondent **Michael T Collins** thinks inside the box with this object lesson in box construction

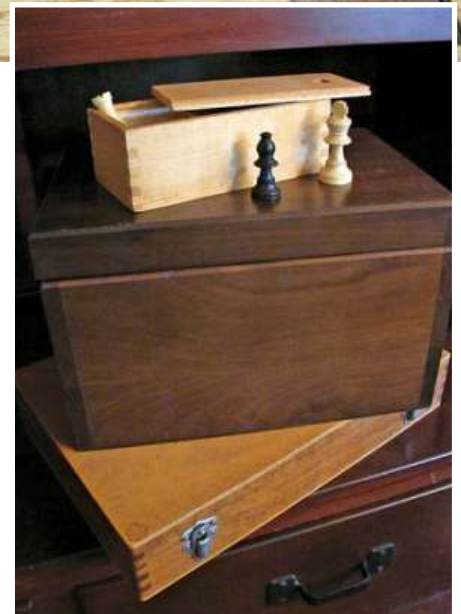
I have been fascinated with boxes for as long as I can remember and have amassed quite a collection, ranging from simple rectangular boxes to more complex sculpted puzzle boxes that I have long since forgotten how to open.

In this article I am going to take you through the steps of creating a simple sliding lid box using some new techniques. The size can be as large or small as you like. This box will be 75 x 63 x 230mm made from a scrap of white oak (*Quercus alba*) 12 x 63 x 660mm. The top and bottom are made from a piece of rip-sawn cherry (*Prunus serotina*).

So far in this series we have looked

at large joints. Making this box is going to require some finer joinery and will be less forgiving. You might want to practise the techniques covered using softer wood such as poplar (*Populus spp.*) or pine (*Pinus spp.*).

There are many ways to join box corners, from a simple butt joint, lapped joints and finger joints through to dovetails. But if you want an unbroken flow of the wood's grain around the corners, the only one available is a butt mitred joint. We could also use a 'secret' dovetail – one where the dovetail is hidden inside the mitre – but this is a much more complicated joint to execute.

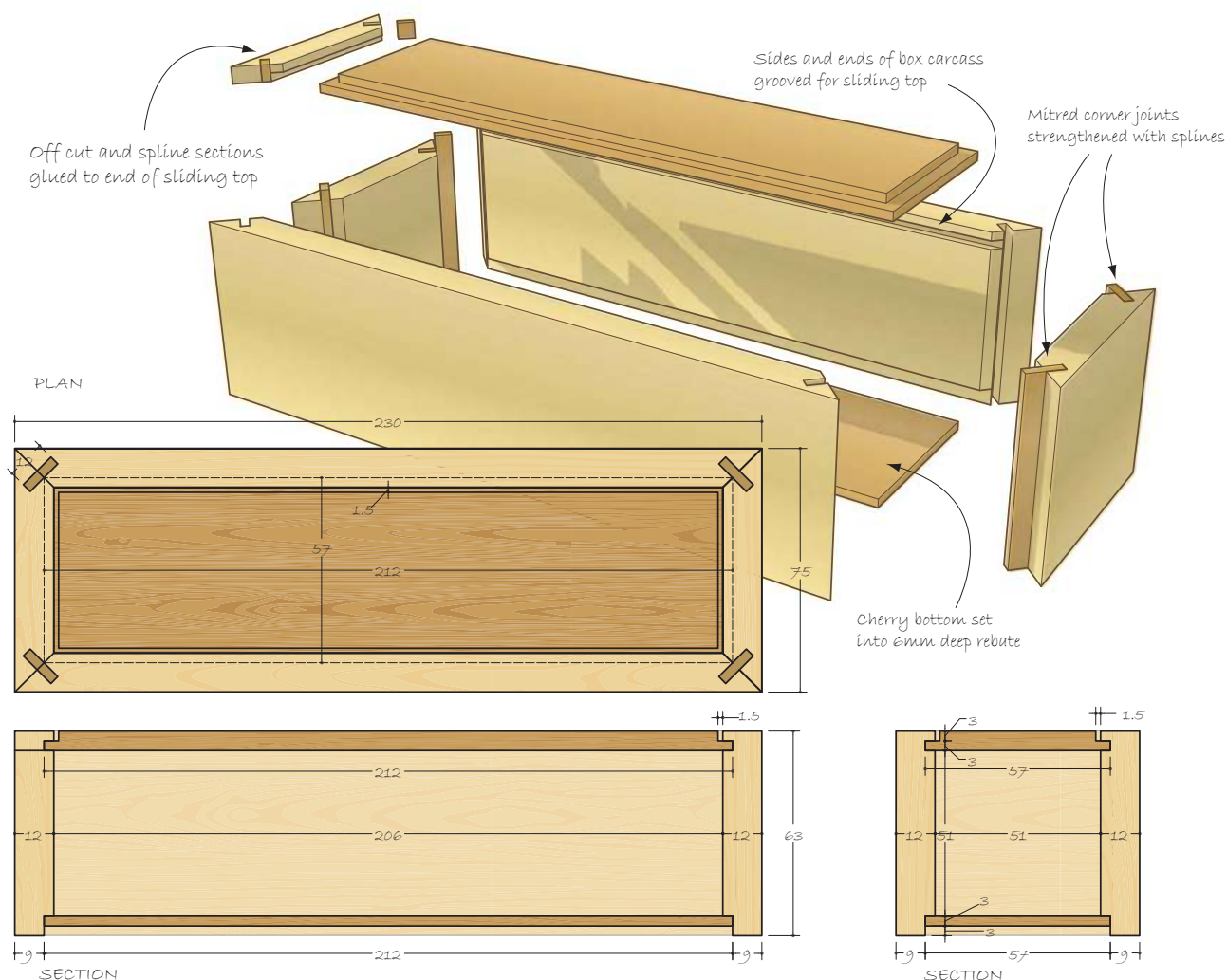


Some of the boxes in my collection

## What you will need:

Time to add three new 'necessary tools' to the toolbox: a combination square, cutting gauge and a homemade mitre box. You will also need a combination plane or plough plane, 3mm and 6mm cutter, block plane, crosscut and tenon saw. A couple of extra clamps would also be useful.





The problem with butt joints as we saw in issue 3, is that they produce a very weak joint unless some additional mechanical device is used. Although, having said that, I have several boxes whose mitres are simply glued and have lasted many years – it all depends on the ‘abuse’ that the box encounters. One trick I learned is to spread some watered-down PVA glue on the mitre cuts and let it soak into the wood. Once dry, the glued joint will hold much better.

But let’s look at a more secure method – enter the spline joint.

### The spline joint

This joint is similar in construction to a tongue-and-groove joint, but instead of a tongue it consists of two matching grooves lined up and facing each other. A thin piece of wood – a spline – is then glued between the two grooves.

### Cutting the lid’s groove and bottom rebate

**1** Bring the wood to final dimension, marking the face and edge. It’s much easier to cut the groove and

rebate while the wood is still in one piece – planing a groove in a short piece of wood is fraught with difficulties. Using the combination plane and a 3mm cutter, set the fence to 3mm and the depth stop to 3mm. Plane the groove starting at the end farthest from you and working back towards yourself. Place the wood at the edge of the bench so that the plane’s fence can reference off the bench and wood’s edge. Pay attention to the grain direction – you want the grain to be rising up and away from you. However, working with wood is always a compromise; the grain will be with you in one direction but against you when you plane in the other direction. If you have unruly grained wood use very sharp cutters and take thin shavings.

**2** The rebate or shoulder is cut using a depth of 3mm and 6mm wide. Once the groove and rebate have been cut, the mitres can be cut. To do this you will need a mitre box – this can be bought but it is very easy to make your own. ➤





## Making a mitre box

**3** Very accurately create a U-shaped box with sides and bottom secured with screws, from the side, at  $90^\circ$  – the height needs to be greater than the wood you are going to mitre. Then with a combination square mark two intersecting  $45^\circ$  lines – carry these lines down the sides. Then, very carefully, saw vertically down with your crosscut saw.

## Box layout

**4** Lay out the four parts of the box in the order they will form the box, this will produce the desired wrap-around grain.

**5** Use a crosscut saw to cut the mitres. Always saw from the face side to avoid tear-out, which should be minimal due to the fine saw kerf. Number the pieces to keep them in the right order and orientation. Use the block plane to lightly clean the mitre's surface. To avoid tear-out, plane at an angle so that the fibres are sliced. One of the end pieces needs to have the section above the groove removed – use a fine kerfed saw to cut off the section above the groove. Keep this piece as it will be needed later to form the end of the lid.

## Planing the spline groove

**6** The spline groove which is cut into the end of each mitre is 6mm deep x 3mm wide, which when assembled will give a 12mm slot for the spline – this is a very tricky process so make a few extra pieces to practise on. Tightly clamp the adjoining corners face side together, making sure that they are square and form a  $90^\circ$  angle. With the combination plane set the depth stop to 6mm and the fence offset so that the groove will be in the deepest part of the mitre. Carefully plane the end grain just enough so that you can see where the cutter will exit the wood. At this point, score both sides of the exit ...

**7** ... or use a scrap piece of wood to eliminate tear-out as the cutter exits. A razor-sharp cutter is needed here. Take your time planing the spline so that again any tear-out is kept to a minimum. Repeat this process for all the grooves.

## Making the top and bottom

**8** The top and bottom are ripped from a piece of 12mm thick cherry. The top is 6mm and the bottom 3mm.





Marking the location of the saw cut with a marking gauge, place the wood in the vice at 45° and rip. Pay attention to the start of the cut – if the saw seems to be drifting off course, twist the saw in the direction of drift – for example if the saw is drifting to the right of the line twist the handle to the right (clockwise) to pivot the saw back on track.

**9** Once ripped, plane off the saw marks...

**10** ... and cut both pieces to size. The top will need to be 6mm wider and longer to account for the 3mm groove. The bottom should be a hair under the distances between the rebate. For the lid, use a cutting gauge or set the combination plane's knicker to mark a 5mm rebate on the end grain, this will prevent the fibres from tearing as the plane slices across the grain.

**11** A 5mm rebate will give a 1.5mm gap around the lid – make this a hair over 3mm if you want a tight-fitting lid. Adjust the depth stop to 3mm and cut the lid's rebate. Glue the piece that was removed earlier to the lid securing it with masking tape and placed it under a weight.

### Making the splines

**12** The splines are 12 x 3mm and cut from the extra wood of the top – I use a cutting gauge, from both sides, to 'rip' the pieces – you could also use a knife and a straightedge.

**13** Assemble the box and insert the splines to test the fit – the splines should slide in without being forced.

**14** They should be slightly less than 12mm so that the mitred faces come together with room for glue. Bring the size down using a block plane. With small pieces, it is easier to hold the plane upside-down and pull the spline across the sole of the plane – just watch out for the blade!

### Glue up

**15** Make sure that you have the pieces in the right order and facing the right way up. Glue the splines in place first then glue the bottom in – gluing the bottom in will ensure the box is square. ➤





**16** Depending on where the splines fall in the mitre, you may need to trim the bottom corners because the rebate cuts into the spline area.

**17** Use cauls to protect the wood – I cover mine in electrical tape, which resists glue adhesion. Check for squareness.

**18** Once the glue has dried, fit the lid again. Depending on where the splines fall, the corners of the lid's leading edge may need to be trimmed off, alternatively, the small piece of spline that's in the groove could be carefully removed. It certainly needs to be removed where the lid enters the box. Use a slicing action to do this.

**19** To complete the look – a small piece of spline can be added to the lid.

### The finish

**20** Bring all the splines flush and ease all the edges with the block plane, then sand the whole box following the grain with 220 grit and wipe off the dust with mineral spirits.

**21** My go-to finish is an oil varnish mix – two or three coats, the first of which is liberally applied and allowed to soak in; any excess is wiped off with a lint-free cloth. Lightly sand with 320 grit between coats, wiping off the dust with mineral spirits. Be particularly careful not to get too much finish in the lid's groove. Once dried apply a good quality furniture paste wax and buff to a shine.

Box making offers endless possibilities so why not get in the 'groove' and make yourself a classic sliding lid box. ■

### Michael T Collins

British-born Michael has been working with wood off and on for 40 years. He moved to New York in 1996 and over the years, has made bespoke furniture, including clocks, inlay work, Adams fireplaces, book cases and reproduction furniture.

**Web:** [www.sawdustandwoodchips.com](http://www.sawdustandwoodchips.com)

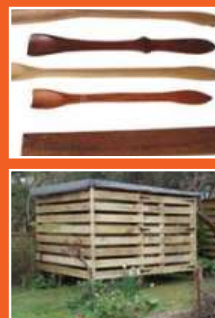
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### Disposing of finishes

Since most finishes contain Volatile Organic Compounds (VOC) it is important to dispose of the cloth following the manufacturer's instructions – I lay mine out flat on a cement floor until dry.





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# GREEN WOODWORKING

## Steam bending

**Peter Wood** explains how to steam wood and makes a bow for a Windsor chair

**I**n this article I will look at the art of steam bending and demonstrate how you can bend a simple bow for the back of a Windsor chair. In previous articles I've examined using a shavehorse and cleaving so I will concentrate here on the practicalities of steaming the blank. You can create many jigs, bending straps and other aids to make the bending easier but I'm going to show you my simple way of bending without the use of anything complicated, so it is easy to replicate in your workshop without the need for specialist equipment.

### Steam bending equipment

My equipment is very simple; I need to produce a constant flow of steam, I need a container to hold the steam and the wood to be bent and I need a former to shape the wood around.

My steam generator is an old gas bottle – gas removed! – with an extra pipe added that runs to almost the bottom of the bottle. This pipe allows me to fill the bottle with water. Most of the time the steam generated is forced out of the original connection but as the bottle runs dry, steam comes out of the filler pipe indicating more water



PHOTOGRAPHS BY PETER WOOD



My setup for steam bending

### Health and safety

Steam bending can be dangerous so you'll need to take precautions. Your safety is paramount as dealing with steam means there's a danger of scalding. The wood is under great tension while being bent so you have to guard against clamps, benches and people slipping and your wood springing open. You'll need gloves to protect you from the steam and hot wood, some strong clamps, a sash cramp and some rope to secure the completed bend.

needs to be added. Heat is supplied by the fire underneath. Note the funnel on the pipe that makes filling easier and a kettle also being heated by the fire, so I can add boiling water as and when needed. In a workshop with power you can substitute a wallpaper steamer for my rig but have a kettle to hand as, if the steamer runs dry, you'll want to get back up to steam ASAP.

My 'steam box' is a higher grade plastic pipe – one that won't melt when full of steam. The pipe is larger than you'll need for this project as I usually need to steam a whole course's worth of chair backs in one go. I seal each end with a simple plywood bung. You could construct a box of any size to suit you, from plywood or even Celotex. It helps if you can wrap your box in blankets or insulate it further to help retain the heat. My box

is fixed to a stand at a slight gradient so the condensing water runs out of the end. Don't be too precise with your joints on the box as you need to let the steam escape from somewhere – ideally the steam should be 'whistling out'.

Your wood must be bathed in the steam rather than resting in the cooler condensed water so add some supports so the wood is raised to the top of the box. ➤





A plywood bung seals the steam box



Supports raise the wood to the top of the steam box



The blank is now ready for the steamer



Fig 1: A variety of formers



Here I have the second clamp ready to secure the piece of wood when I take it out of the steamer



Fig 2: Fine ash with knots

## Formers for steam bending

We bend the wood around a former that is the exact shape we want, the bend needs to be as gentle as possible, a tighter radius or sharp points during the bend are where the wood will fail. In this picture – see Fig 1 – there are three formers; the top one is for a continuous-arm Windsor, the middle – our bend – is for an arm or back and the bottom one is for a child's chair, which has the tightest bend and is most likely to fail.

Use one of the clamps to secure the former to a solid bench. During the bending process the former and bench is under a lot of pressure from the wood and you do not want the bench or former to move during the bend.

With our equipment in place we can now look at the wood selection and then bend it.

## Wood selection

To steam wood we are hijacking the ability that some, but not all, woods have to bend when they are bathed in steam. The appliance of steam superheats the wood, softening the sap between the growth rings and allowing some movement so that the wood will 'slide' along each growth ring; this allows the wood to take on the shapes you want while retaining its strength.

There are lots of species that will bend and I suggest you source good local timber, be it ash (*Fraxinus*

*excelsior*), which I use predominantly, beech (*Betula pendula*) as used by the chair makers around High Wycombe or perhaps hickory (*Carya spp.*) or red oak (*Quercus rubra*) in America. Yew (*Taxus baccata*) is very easy to bend but hard to shape so we'll leave that for a later chair!

The ideal material is a perfectly straight log, as free from knots as possible and most importantly, quickly grown. The ideal is 5–10 growth rings per 25mm, I've had very few failures with quick grown timbers and very little success with slow grown. For a simple bend some pin knots are fine but again, speed of growth is the key. In this picture – see Fig 2 – you can see some fine, quickly grown ash but unfortunately it has some knots that will create weak points, which when bent, will fail and crumple, eventually breaking. Be as picky as you can with your wood selection!

I prefer greenwood, either freshly felled or wood that's been left in the round so it still has some moisture in it. My second choice is air-dried planks with a cell structure that still has the potential to 'take up' moisture and plasticise. I steer clear of kiln-dried wood as I feel the drying process reduces its ability to bend.

## Preparing the wood

To prepare the wood either cleave a section 25 x 25mm min length,

1.5–1.7m or cut a section out of a suitable plank using a bandsaw. Be sure to follow the grain rather than trying to produce a dead straight section. It's more important to have no grain 'running out' than a straight billet, each point where the grain 'runs out' is a potential break during the bend. I prefer to cleave the wood along the grain keeping the bark intact on the outside edge. The bark will stay on until after steaming, ensuring I have one untouched edge, which will form the outer edge of a bend.

Clean up the sides of the blank using a drawknife or spokeshave until you have an even 25mm square section all the way along. The blank should be smooth with no grain pulled out or cuts left in the blank. Any cut into the wood will create a point of weakness where again the bend will be likely to fail. Don't be tempted to leave some bulk to remove later as the effort required to bend increases as the size of the blank increases. My blank is ready for the steamer. You'll notice it's curved and that there is a slight irregularity at the closest end, I'm confident this irregularity will not be a problem as this section stays straight with most of the bending further up the billet. Finally, mark your clamping point on each side of the bow, on this bend it's going to be halfway along.



## STEAM BENDING TECHNIQUE

**1** Once there is steam in the steam box, put in the blank, seal the end and wait for steam to come up again. This will take a little time as the wood needs to get up to heat. Start timing once you have steam again. The rule of thumb is steam for approximately one hour for each 25mm thickness. If the wood you're using is particularly dry, you can increase the time. For my bend, I had to increase the time by an extra 15 minutes as the finished billet had dried out. However, don't leave the wood in indefinitely as after a few hours the wood loses its ability to bend and has more of a tendency to break. While you are bending you are faced with a dilemma; you must work quickly but if you work too quickly the wood will snap, too slowly and the wood will cool too much to bend.

**2** Remove the steamed timber carefully wearing a good pair of gloves as hopefully there'll be a real head of steam so make sure you don't scald yourself and if you wear glasses watch out for them fogging up! Clamp the timber on the centre point that you've marked previously, as this will give you maximum leverage on both sides. Be aware you now have about 90 seconds to complete the bend!

**3** Slowly bend one side around, you should be able to 'feel' it bending. Do not make any jerky movements.

**4** Now reach over and slowly bend the second side, it will be starting to cool so will take a little extra effort and you'll need to be a little slower in your movements. Here is where a friend's help is very welcome either bending the second side or holding the wood in place.

**5** If it's proving hard to bend the final few degrees, put a sash cramp over the end of the wood and wind it in until it's at the desired finish point but be careful as the sash cramp will be resting on sappy/slippy wood and has the potential to slip causing the wood to spring open.

**6** Once completed, tie the bend with some rope and it's now safe to leave to dry. It's best if you can leave the bend on its former for a few days while it dries and sets, it'll feel loose on the jig when it's ready to be taken



off although if you're in a hurry, take it off the former and leave it in the sun to dry.

**7** Your finished bow should look something like this.

**8** And here it is as part of a chair. I hope you have as much success with your steambending. ■

Here's a short clip of me bending some sweet chestnut (*Castanea sativa*) for a structure to be built at Hampton Court. I had to do over 70 bends in a couple of days! <https://www.youtube.com/watch?v=3pa6jzOZ1u4>

### Peter Wood

Peter has been a skilled green wood craftsman making Windsor chairs and other creations for over 25 years.

He demonstrates these skills around the country, gives lectures and runs hands-on workshops for all ages. He set up Greenwood Days in the National Forest as a centre to teach a range of traditional and contemporary crafts. He is also the current world champion pole lathe turner!

**Web:** [www.greenwooddays.co.uk](http://www.greenwooddays.co.uk)





# DENDROCHRONOLOGY: timber as a timepiece and so much more

Dr Nicola Davies explains the science of  
analysing tree-ring data

PHOTOGRAPH COURTESY OF WIKIPEDIA/COMMONS

The centre of a polished slice of a petrified tree from the late Triassic period – approximately 230 million years ago – found in Arizona. The remains of insects can be detected in an enlarged image



**T**he term dendrochronology refers to the practice of determining a tree's age from its rings. The science of dendrochronology hinges on the growth rings that trees produce annually during their growth seasons. The width of a tree ring is dependent on a number of factors, including the available moisture from precipitation and variations in temperature endured by the flora. This scientific field of study concerns itself with the interpretation and dating of historic, scientific, cultural and climatic occurrences and trends. Dendrochronology demonstrates the inherent utility and flexibility of trees and timber.

Dr Henri Grissino-Mayer, Professor of Geography at the University of Tennessee-Knoxville, says: "Like any other science, dendrochronology has overarching principles. Many of these principles are borrowed from other sciences. For instance, the principle of uniformitarianism states that the present is the key to the past so with this principle we can reconstruct climate, for example, with tree-ring data."

### Birds of a feather flock together, so do oak and elm ... apparently

The similarity between the growth rings of trees in the same general location, as well as those facing the same climatic conditions, allows dendrochronologists to analyse tree-rings and construct extensive chronologies going back thousands of years. One particular chronology of central Europe goes back some 10,000 years. The Central European study analysed oak (*Quercus robur*) trees almost exclusively and was completed by the Hohenheim Laboratory.

There is much more to dendrochronology than counting rings in trees. "We don't just count tree rings!" states Grissino-Mayer, "Statistical orientation is necessary. My training as a biogeographer, biologist and a statistician come together. We ensure that the tree rings we analyse are precisely dated to the exact date without any plus or minus to the year. This is the principle of crossdating. We will not use tree-ring data unless we are 99.99% confident that the tree rings are precisely dated."

The amateur falls victim to the false premise that he can identify

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS



A dendrochronological drill bit designed to make core samples for accurate laboratory analysis. Frequently used to date timbers in ancient wooden structures such as timbered houses, barns and ships

when a particular ring was formed. Tree-ring growth may not always be annual. Therefore, the field of dendrochronology dictates that a particular tree-ring be assigned a specific calendar year. For this to be successfully carried out a number of principles must be satisfied.

The first fundamental principle is that the growth rings of the tree species must be well-defined, i.e. there must be sufficient contrast between the wood formed early in the growth season and the wood formed in the latter part of the growth season. This usually accounts for the lighter and darker rings. Second, the rings must have concentric uniformity toward the centre or the pith. Third, there must be variations in the annual rings – the principle of sensitivity. In other words, the tree should be able to demonstrate its sensitivity, or response to environmental variables, by the presence of a range of ring widths. Since dendrochronology is dependent on tree-ring patterns, a tree with the same ring widths throughout would provide no distinct pattern that could be used in crossdating or matching with that of another tree.

### It's alive!

Despite the difficulty in absorbing and employing the rigid methodology of dendrochronology, dead trees give up their secrets without much resistance – timber obtained from archaeological finds, victims of large construction projects, tree stumps and fallen logs. The more intrepid among you may have turned your thoughts to vivisection – how are tree rings obtained from living trees? There's a tool for that – the increment borer.

The increment borer allows scientists to remove a narrow cylindrical sample



PHOTOGRAPH BY GARCANTHONY BAILEY

The Editor's own crude attempt to date a mature pine tree which he has chopped up for firewood! It appears to be about 70 years old but an expert could date it more accurately as each apparent annual ring needs to be interpreted properly

### Andrew Ellicott Douglass



The modern development of dendrochronology as a science can be credited to the astronomer Andrew Ellicott Douglass, who founded the University of Arizona Tree-ring Research Laboratory in 1937. This laboratory has worldwide recognition as a foremost authority on dendrochronological techniques and their application in the fields of environmental and social science.

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS



PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

An accelerator mass spectrometer at Lawrence Livermore National Laboratory used for carbon dating. Dendrochronological samples can be used as reference markers to help improve the accuracy of carbon dating

of a tree trunk. The tool is composed of a hollow metallic cylinder, measuring about 4–5mm, though sometimes even up to 160mm. The cylinder's tip is threaded to form an auger or cutting tip. A detachable metal handle is attached perpendicularly to the cylinder to facilitate the torque needed to drill into the tree trunk.

After extruding the wood, the tree-ring containing sample is taken to a laboratory for analysis. The sample has to be sanded smooth to more accurately reveal the tree rings. ➤





**Main image:** A massive split yew tree (*Taxus baccata*) growing in the churchyard of St Mary's, Buxted, East Sussex. It's almost impossible to accurately date a tree in this condition without a central trunk intact

**Inset and above:** A campaign was mounted to determine and agree the age of this massive yew, which by expert common consent is indeed more than 2000 years old

These rings are then measured using a microscope and the data stored in a computer. The data is then compared with other chronologies from recognised chronology datasets, using computer software that matches ring patterns of the sample to a master pattern.

## Dendrochronology in the UK

Many assumed that dendrochronology would have been hampered in Britain because of the complex climate experienced there. Science, however, has silenced the doubters and Grissino-Mayer confirms: "The UK is at the forefront of dendrochronology. Tree-ring dating is used in its historic and prehistoric structures and musical instruments. These data can be used to reconstruct climate and date historic structures. The UK has had some of the top dendrochronology programmes for a long time now."

For accurate dendrochronological analyses to be carried out, an existing master tree-ring pattern has to be available for a particular geographical region and for the specific tree species. This places limitations on how far into the past tree-ring dating

can be applied. Currently, accurate dendrochronological studies are only facilitated because of tree species like the bristlecone pine (*Pinus aristata*) and oak, whose ages span centuries and sometimes millennia, providing a somewhat continuous pattern against which other trees may be matched.

In the UK, oak is one of the most documented species because of its widespread use in building timber-framed structures in the past. However, oak wasn't the only species used in construction; elm (*Ulmus procera*) and Western red cedar (*Thuja plicata*) were also utilised. If the only master chronology available for a region is for the oak species, its use in the crossdating and analysis of other species will certainly be unreliable.

## The limits of time

Despite proving itself an accurate dating method, dendrochronology does have some limitations. One of the foremost limitations is that, in some parts of the world, the tree species that are available don't demonstrate clear-cut seasonal patterns. Grissino-Mayer explains, "Tree-ring dating doesn't work so well in the tropics. In these



PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

Whereas tree ring dating in the UK is most commonly done with oak timbers, in the US the rather raggedy looking bristlecone pine is the dendrochronologist's tree of choice

areas, trees don't shut down growth to form an annual ring and without that we cannot count the tree rings."

Additionally, where there is an availability of suitable tree species, the wood needs to be adequately preserved so that the tree-rings will be easily identifiable; each specimen should have a minimum of 30 rings. In some cases, trees that are cut at a young age don't have enough rings to facilitate accurate cross-matching.

Another requirement and potential hindrance to the application of dendrochronology in historical studies is that there has to be a fairly extensive use of timber within the time period and geographical region under consideration. Tree-ring analysis of the timber used in construction is a major way in which time stamps can be identified and applied.

Other limitations are linked to the





**Above left:** A portrait of Mary Queen of Scots, determined to date from the 16th century by dendrochronology by an unknown artist. Previously it was thought to be an 18th-century copy



**Above right:** Little Moreton Hall, Cheshire is mid 16th century, like the portrait to the left. Dendrochronology can be used in buildings like this to determine whether much older timbers have been incorporated in the structure

PHOTOGRAPHS COURTESY OF WIKIPEDIA COMMONS



St Brothen's Church, Llanfrothen, Wales is a Grade 1 listed structure which has had various changes made to it. Tree ring dating has determined that the trees used to make the rood screen dated between 1496-1506

inherent structure of a tree developing from sapwood to heartwood. It is well-known that sapwood – the outer lighter-coloured section of a tree trunk – is much softer than the inner and darker-coloured heartwood. As such, sapwood is more prone to decay precipitated by moisture and insects. This may result in the absence, or removal, of sapwood from timber surfaces used in the construction of timber structures. The removal of the sapwood along with the outer tree-ring often makes it impossible to pinpoint the particular year that tree was felled.

Despite the anomalies and



On a lighter note – Baumkuchen is a traditional German layer cake made from flour, eggs, butter, sugar and vanilla. The name translates as 'tree cake' on account of the rings in the cake – yummy!

limitations, it is safe to say that dendrochronology has allowed us to leverage trees and timber into powerful timepieces. It is true that the field of tree-dating has its fair share of critics. However, there is extensive and well-documented research spanning decades to support the principles involved in dendrochronology. The enthusiast can access dendrochronology archives and databases for themselves. For example, the Vernacular Architecture Group maintains a dendrochronological database of tree-ring dates for more than 3,000 buildings in the UK.

PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

## Dendrochronology websites

National Centers for Environmental Information (NOAA)  
[www.ncdc.noaa.gov/data-access/paleoclimatology-data/datasets/tree-ring](http://www.ncdc.noaa.gov/data-access/paleoclimatology-data/datasets/tree-ring)

Nottingham Tree Ring Laboratory  
[www.tree-ringdating.co.uk](http://www.tree-ringdating.co.uk)

Oxford Tree Ring Laboratory  
[www.dendrochronology.net](http://www.dendrochronology.net)

University of Arizona Laboratory of Tree Ring Research  
[ltrr.arizona.edu](http://ltrr.arizona.edu)

Vernacular Architecture Group  
[www.vag.org.uk](http://www.vag.org.uk)

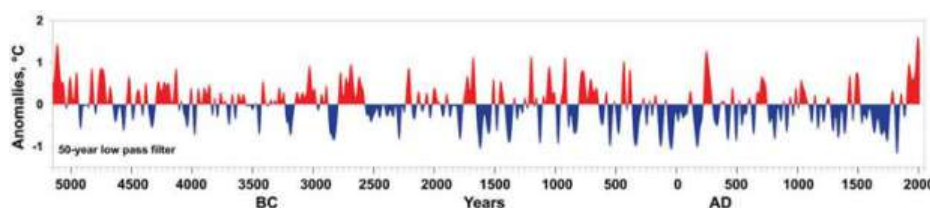
## Taking up dendrochronology

Grissino-Mayer provides the following tips to aspiring dendrochronologists, "You have to be a tree person! You need to take biology courses and study botany. Maths is also important for this field as you will be working with very specific software. Hence, it is a combination of maths and sciences. You need to read a lot on your own. Visiting a tree-ring laboratory can be beneficial. For example, you could interact with foresters, biogeographers, dendroecologists and dendroclimatologists who regularly use tree-ring data."

As a woodworking enthusiast, you can start your first project in this field by attempting to date a tree or even the timber used in your home. If you don't have access to the wooden slabs or cross-sections that you need, you might have to obtain an increment borer. This tool will also come in handy when coring live trees. Be sure to seal the hole you create to protect the tree from disease. All the information you need is readily available, and the results of your investigation might surprise you.

## Dr Nicola Davies

Dr Nicola Davies is a psychologist and freelance writer with hundreds of articles published in 10 countries. Her research skills make her amenable to a variety of subjects, all with a human interest angle. You can follow her on Twitter (@healthpsychuk) or sign up to her free blog: <http://healthpsychologyconsultancy.wordpress.com/>



This chart underlines some of the difficulties of dating timber from tree rings due to the sometimes extreme changes in temperature that can affect each ring

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# PLANS <sup>4</sup>YOU

## Dressing table

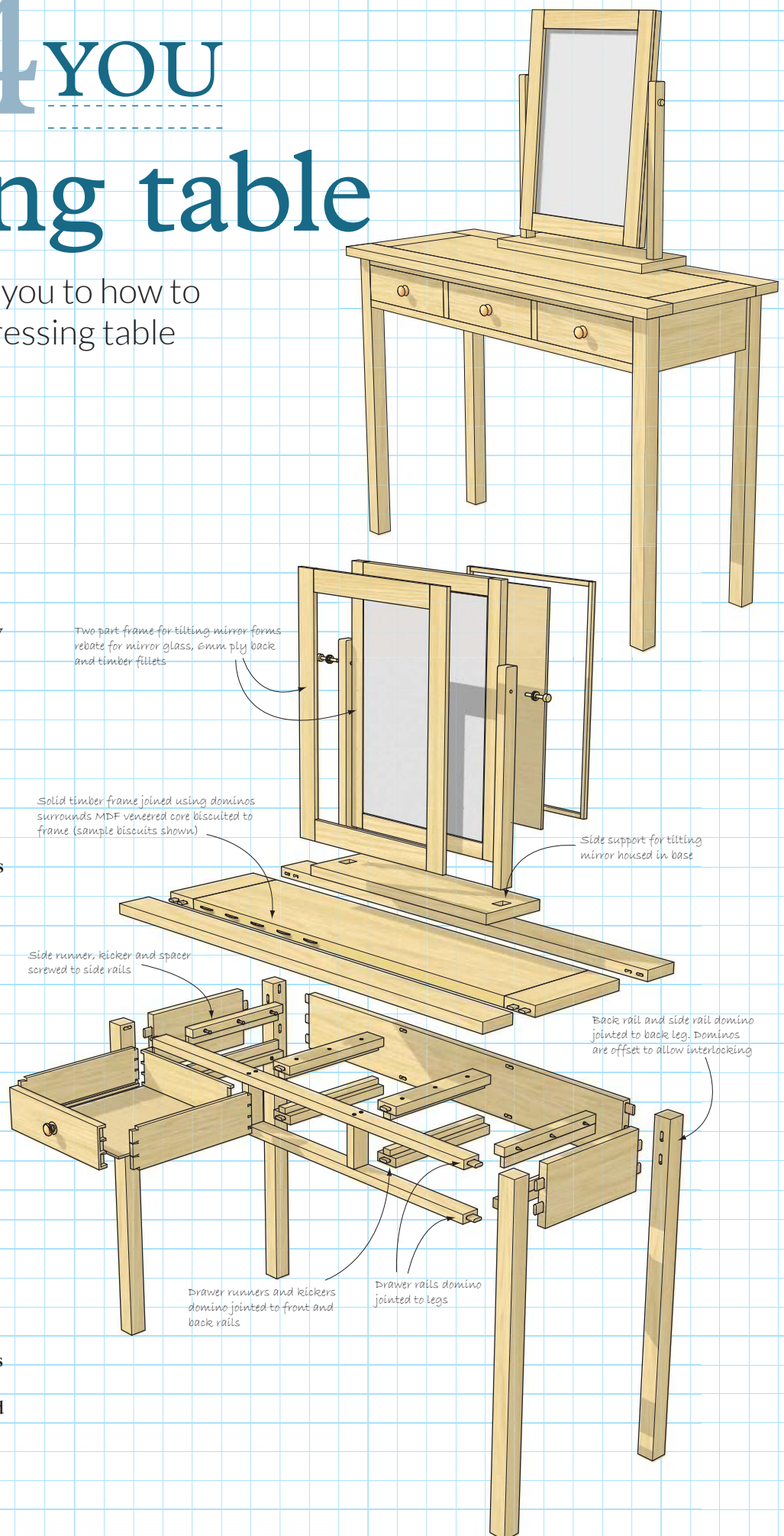
Simon Rodway shows you to how to make your very own dressing table

Dressing tables have always seemed like the kind of thing you have once you've sorted everything else; a bit of a luxury item I suppose, although I'm sure once you have one they are completely indispensable! I have followed a bit of a trend with this one and designed it so that the mirror, which is often incorporated into the structure, merely sits on the top and I suppose that does allow for a bit of flexibility in terms of eventual use.

The table and mirror are both built of oak (*Quercus robur*), which will need to be cut accurately to use the Domino and biscuit jointing I've used here. You could, of course, employ traditional jointing, lap dovetails on the top drawer rail, mortise and tenons elsewhere, but a domino jointer will save you huge amounts of time. Although there are no unusual shapes, there are lots of component parts and it's easy to lose track of which bit goes where – I've done it more than once – so organisation is key, sizing and cutting in batches wherever possible. The front and back legs, for example, not only have a different layout of mortises for the Dominos, but are handed and need the Dominos to interlock, the pair on the side rails joined in between the trio on the back.

I usually like to put ends of frames together first, but this type of table requires a front and back assembly, and is then joined with the side rails, drawer runners and kickers. One problem with Dominos is that they are such a snug fit, that dry fitting becomes a real issue, so one way around this is to sand the sides of a few Dominos and mark them as 'dry fit' – but don't use them for the final glue up.

The drawers are a traditional mix of half blind dovetails at the front and





## CUTTING LIST

Top frame	2 @ 1,044 x 76 x 22
Top frame	2 @ 417 x 76 x 22
Sheet core	1 @ 892 x 265 x 18
Legs	4 @ 738 x 38 x 38
Side rails	2 @ 290 x 127 x 19
Back rail	1 @ 917 x 127 x 19
Drawer rails	2 @ 917 x 38 x 19
Dividers	2 @ 89 x 38 x 19
Kickers/runners	4 @ 300 x 51 x 19
Guides	4 @ 300 x 19 x 13

Drawer fronts	3 @ 293 x 89 x 19
Drawer sides	6 @ 328 x 89 x 10
Drawer backs	3 @ 293 x 78 x 10
Drawer bottoms	3 @ 318 x 280 x 4

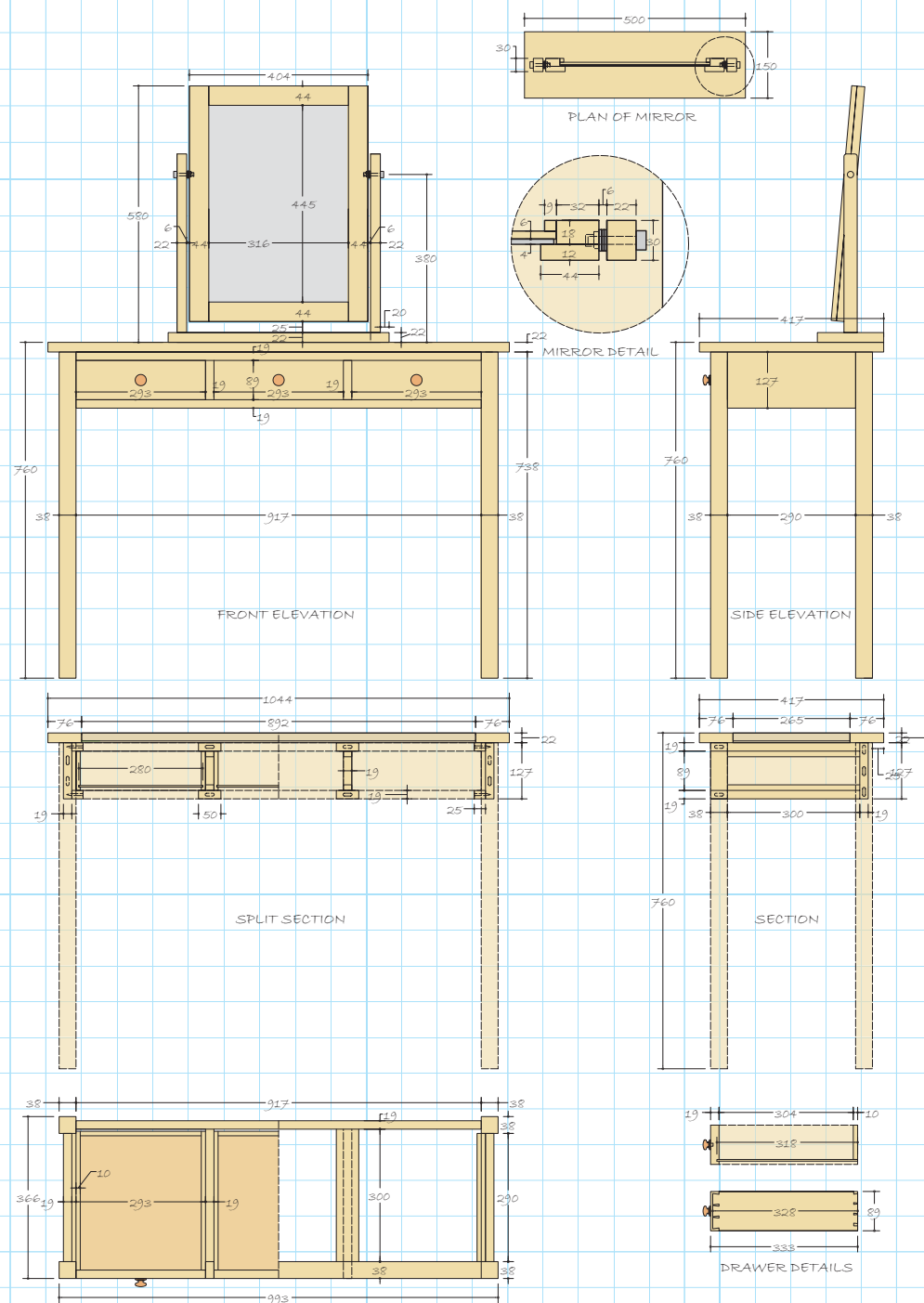
Mirror front frame	2 @ 533 x 44 x 12
Mirror front frame	2 @ 316 x 44 x 12
Mirror back frame	2 @ 533 x 32 x 18
Mirror front frame	2 @ 340 x 32 x 18
Plywood back	2 @ 371 x 340 x 6
Mirror supports	2 @ 426 x 30 x 22
Mirror stand base	1 @ 500 x 150 x 22

Spacers on either side of outer drawers are not included and neither is the beading to capture the plywood back to the mirror. Cut both to fit.

through dovetails at the back, with sides and front grooved for the 4mm ply bottom. Once you have made the drawers, fit the dividers, spacers at each end and the top and bottom guides. As these are all screwed into position, you have a bit of leeway in terms of getting the drawers to run smoothly. Add a drawer stop for each drawer on the top face of the bottom drawer rail.

The top is constructed using a solid oak outer frame Domino jointed, with a sheet – MDF – veneered core, biscuited along its outer edge to the frame. If you have trouble matching the veneer to the solid timber, make a feature of the contrast. As the main part of the top is MDF and dimensionally stable, you can screw straight through the kickers into the underside to fix the top to the sub-frame.

The mirror is formed using a built up frame using smaller sections glued together to form a virtual rebate, but you may want to change this, and go for a solid section actually rebated instead. Use dowels to join the butt joints at the corners. The 4mm mirror glass is held in place by a ply backing piece which is secured by glazing



beads pinned into the frame. Allow a 2-3mm gap all round the glass so that it can move relative to the timber. A few beads of silicone will stop it rattling around in the frame.

The mirror frame is supported by a pair of uprights housed into a solid oak base, and can be tilted around the side bolts fitted through the uprights and into the frame. A small round over on the top front and back corners of the uprights improves the overall look, and you could add small pads on the corners of the base to prevent any scratching of the top. ■

## Simon Rodway

Simon Rodway also runs LineMine, a website with articles and online courses on drawing software. A new course, 'SketchUp for Woodworkers', is proving really popular. For details and to get discount coupons, see website details below.

Email: [sjr@linemine.com](mailto:sjr@linemine.com)

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This quiet extractor could be a handy solution for small workshops; it is important to make sure the wall is capable of supporting the extractor's weight. Price valid until 31 December, 2015.



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Contact: Axminster Tools & Machinery

Tel: 03332 406 406

Web: www.axminster.co.uk



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# OAK writing bureau

Louise Biggs restores this beautiful oak bureau

**M**y client has fond memories of using this small oak (*Quercus robur*) bureau when he was a child visiting his grandfather and, having kept the piece for many years, he now wished to restore the bureau for his own grandson. The bureau had been kept in a garage and had suffered a little over the years with damp conditions and general wear and tear.

## Assessment

- The writing fall had a split running through where the hinge was fitted along with several other splits.
- A small section had split off from the moulded edge on the hinge side.
- The butt hinges were rusty and broken.
- The bearers that should support the writing fall needed adjusting.
- The small bracket feet that were on the front of the legs were loose.
- The back, replaced with thin plywood, had been attacked by insects.
- The dark finish was badly worn and watermarked on the flap, top and legs.



The bureau had been kept in a garage before restoration

My client requested that the bureau be stripped and refinished to its natural colour with a durable finish and the hinges be changed for ones where the knuckles did not face upwards to catch fingers or paper. As the bureau was not of great monetary value he was content that a piece of veneered board was used for the new back.



The writing fall had a split by the hinge



## What you will need:

- Restorer's cat's paw
- Metal container for stripper and suitable brush
- Chisels – various widths
- Mallet
- Glue pot with animal/hide glue
- Suitable plate for forming dowels or similar
- Drill and drill bit
- Flush cut saw
- 'G' and/or 'F' clamps
- Dovetail saw
- Block and jack plane
- Bandsaw
- Screwdriver
- Hammer and pins
- Grade 3 and 0000 wire wool
- Abrasives for wood and brass
- PPE – face and breathing protection and heavy duty gloves

## Supplies

Antiquing fluid from Restoration Materials:  
[www.restoration-materials.co.uk](http://www.restoration-materials.co.uk)

Jade Oil from Liberon stockists:  
[www.liberon.co.uk](http://www.liberon.co.uk)





## STAGES OF RESTORATION

**1** The back panel, writing fall and small upstand were removed, then the whole of the bureau was stripped using a chemical stripper. Face and hand protection are essential when working with these chemicals. Each section was coated and the stripper was left to work before I removed the resulting debris using coarse grade 3 wire wool. Each surface was coated several times to get as clean a finish as possible and then neutralised using methylated spirits.

**2** The split on the writing fall was prised open and the old wax, dirt and any residual stripper was cleaned out. I used animal/hide glue, which will be used throughout the restoration, to glue the piece and it was held in place using masking tape.

**3** The other split along the same edge was treated in the same way. I cleaned out the fine splits in the writing fall using a flush cut saw and then glued a shiver of veneer in the resulting cut.

**4** Once dry, I used a chisel to cut the veneers flush and clean up. The split across the hinge area was strengthened by inserting two small dowels. I drilled through the split at an

angle which counters the direction of the edge breaking away.

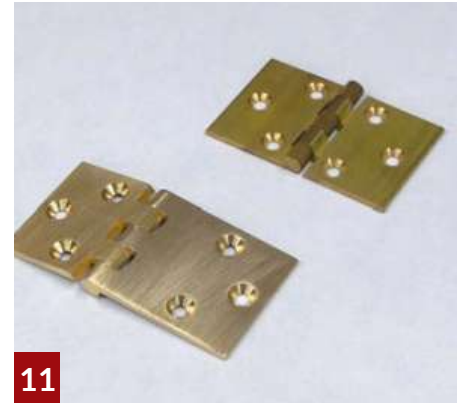
**5** The dowels needed to be made from old oak so I prepared two 100mm long pieces to 5mm square. I used a chisel to shape one end of each piece to the required size, which matches the hole in the dowel making plate.

**6** Using a weighty hammer to support the plate, I firmly held the dowels to prevent them snapping under the hammer blows. Being careful as to what I hit, I hammered the pieces through the hole to produce a dowel to the size required. They were cut slightly longer than required and glued into the holes. They were then cut flush when dry.

**7** I cut a 'V' shape joint with a chisel to eliminate the ragged edges around the missing piece on the moulded side of the hinge edge. I then cut a piece of old oak to fit using a dovetail saw, making small adjustments as necessary to the replacement piece of timber to obtain a tight fit.

**8** The piece was glued into place and once dry, I used a carving chisel and abrasives to match the shape.





**9** There was only a small amount of movement in the joints between the two bracket feet and the front edges of the sides. With a multitude of old nails through them, to try and remove the feet would lead to extensive damage. The joint was cleaned out, then I pushed some glue into it using a thin metal spatula. The spatula was warmed up to keep the glue in a liquid state for longer.

**10** The feet were clamped to keep the brackets flush with the sides and to pull the joints together, then it was left until the glue had set.

**11** Traditionally back-flap hinges – knuckle down – were used under a leather insert that spanned the fall and carcass. Traditional bureau hinges – knuckle up – were used when the leather insert was only on the fall, both allowed the fall to close at the correct angle. Modern back-flaps are made with the knuckles up, so table hinges are now the only ones available to gain the correct angle for the fall when using new hinges. This photo shows a table hinge on the left and a modern back-flap hinge on the right, note the position of the knuckles and the angles on the plates beside the knuckles. The problem with using a table hinge will be the resulting gap between the fall and the carcass,

created by the position of the hinge in order for the writing flap to be closed.

**12** The screw holes for the original hinges were plugged with timber before cutting in the new hinges. The longer plates of the hinges on the writing fall were positioned to cover as much as possible of the area marked by the original hinges, then I used a dovetail saw to cut the outer lines.

**13** The waste area was chipped away with a chisel. Having the bevel facing down enabled the chisel to cut in just enough without going too deep.

**14** The remaining waste was pared out to create a tight fit for the plate of the hinge.

**15** I aligned the fall with the carcass, marked the hinge plate positions and cut out as before. Initially I used one screw to fix each hinge. I closed the fall to check everything aligned properly and made any minor adjustments. Once the hinge positions were correct, I used steel screws to cut into the holes and replaced them with brass screws after refinishing.







**16** The bearers had two problems that caused them to tilt downwards and prevented them from supporting the fall. The first problem was the position of the stops; set right at the back there was no timber behind the stops to counter what was in front of them. Governed by the depth of the bureau this cannot be changed. The second problem was the difference in timber thickness used in the carcass. The section at the front was thinner creating a gap between the bearers and the carcass when fully extended.

**17** Wedges of old oak were shaped to fit above the bearers to make up the difference in thickness on the carcass. They had to be tight enough to act as a kicker for the bearers but not so tight as to stop the bearers smoothly travelling in and out.

**18** I initially cut the wedges on the bandsaw, then adjusted their thickness using a block plane and held them temporarily in place with double-sided tape. The fall was lowered after each adjustment until the necessary support was achieved, then the wedges were glued in place. All the surfaces were sanded with 180 and 240 grit to remove any residue left from the stripping process and to prepare the bureau for refinishing.

**19** The hinges were refinished using a fine abrasive paper and degreased. Although there are recipes for antiques brass to different shades

of brown, most are unpleasant to work with, even if you can still obtain the relevant chemicals. Using a brush, I coated the new hinges and screws with antiques fluid then left it to work until the desired colour was reached. It was then neutralised under cold running water and left to dry.

**20** '0000' wire wool was used on the hinges and screws to give a more natural, aged look by gently rubbing the areas that would naturally wear and as such be brighter. The hinges and screws could then be coated with Jade Oil, which acts as a drier to displace any moisture left on the surfaces and then a protective film.

**21** The new back was made from oak-veneered MDF. The edges were chamfered using a jack plane before veneering them. This makes the back panel a little less obvious given that it is just planted on the back and not fitted into a rebate. I tried out the water stain on some test pieces to obtain the best colour match between the back panels and the carcass.

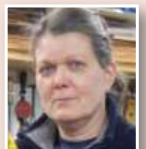
**22** The bureau was finished with three coats of Danish Oil. The oil was applied, left for 15 to 20 minutes and then any excess was removed with a cloth. Each coat was left for 24 hours to dry and I de-nibbed between the coats. The bearers, upstand and writing fall were all refitted and then the bureau was ready to go home. ■



## Louise Biggs

Having completed her City and Guilds, Louise trained for a further four years at the London College of Furniture. She joined a London firm working for the top antique dealers and interior designers in London, before starting her own business designing and making bespoke furniture and restoring furniture.

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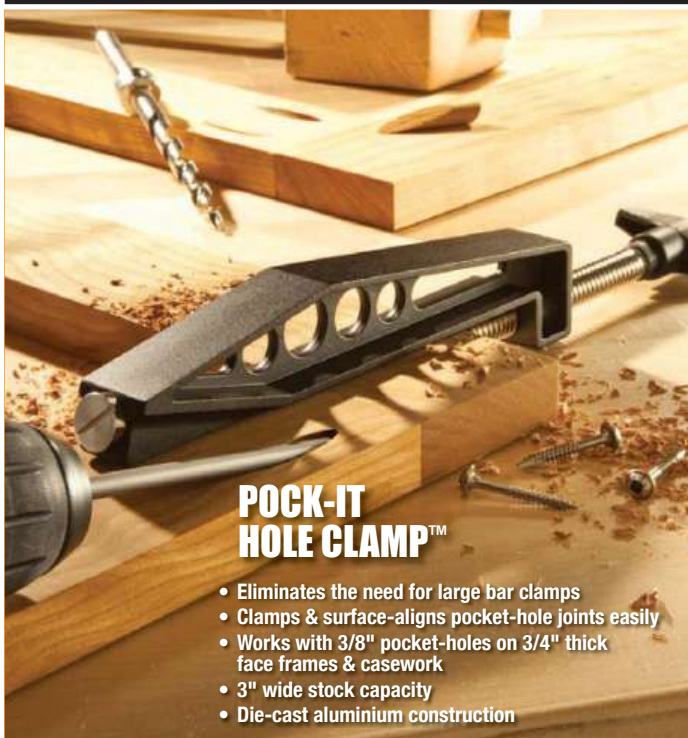
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# WOOD STORAGE SHED

## Part 1

**Neil Lawton** makes a wood storage shed for the back garden

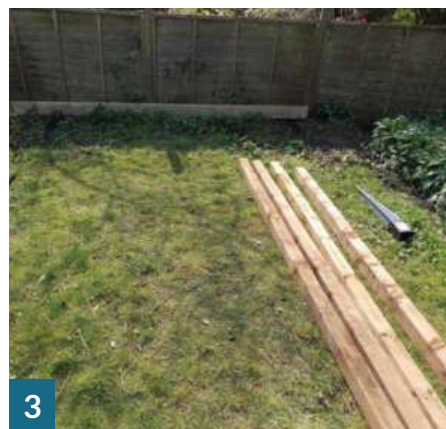
**L**ike many people these days, we have a log burning stove. Ours was fitted about four years ago and at that time, I built a shed to store the fuel. We are lucky enough to have a few contacts to obtain free wood, mainly through my partner's work as a professional gardener. The wood, of course, is green and requires seasoning before it can be used and the original shed was built with this in mind.

Some of the wood we get is far too good to burn and from a turner's point of view, it would be a crime to do so. The design of the original shed has proved very successful at seasoning timber, so I decided to replicate it. One shed for burning timber and another for turning timber!

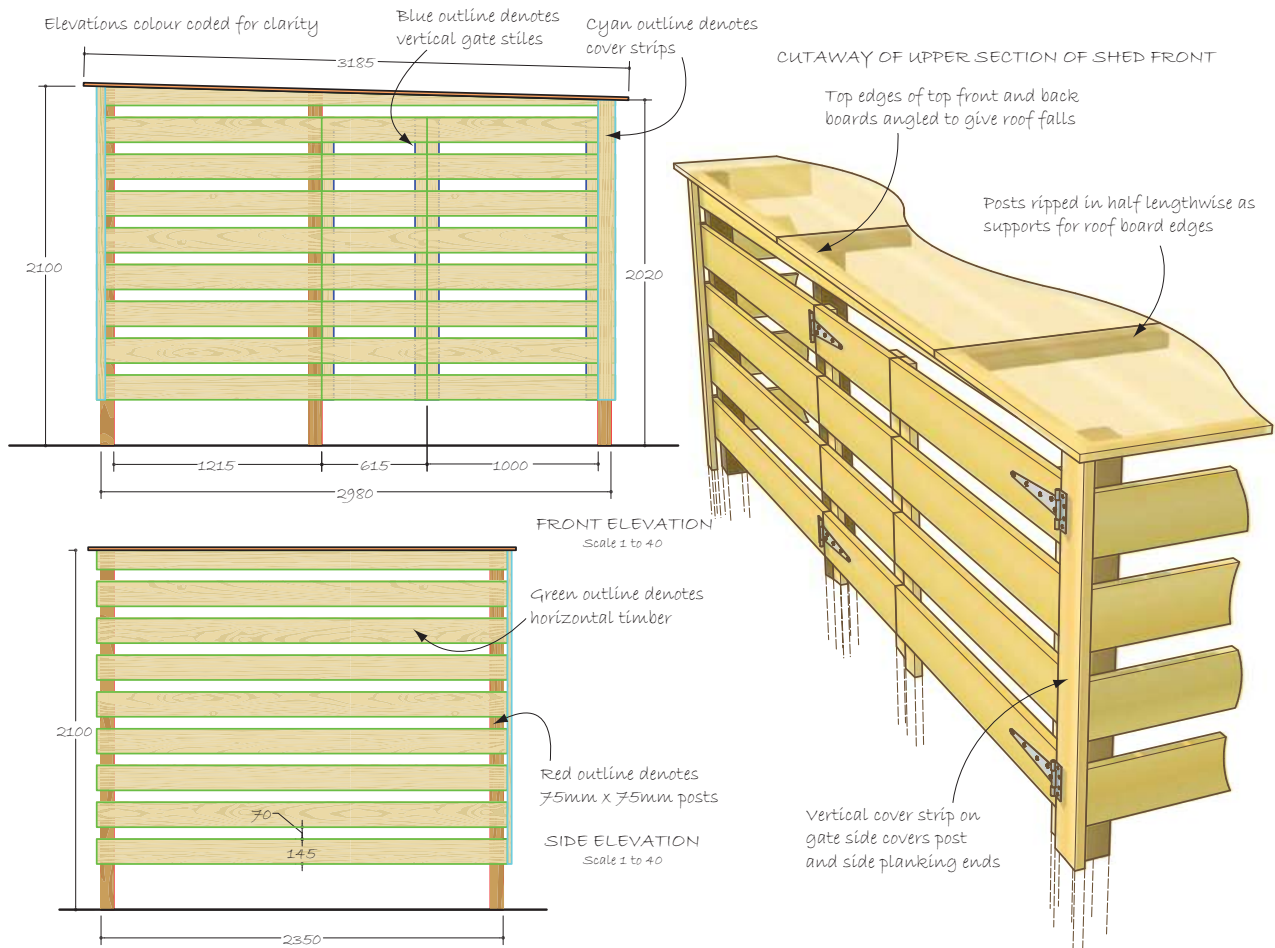
**1** The original shed was in a more shaded spot, so it was left open fronted. When full, it contains a winter's worth of fuel.

**2** The new shed site – an old trellis arch was removed and plants cut back. A small lilac (*Syringa vulgaris*) tree had to be dug out at the back.

**3** The uprights consist of 75mm fence posts, to be hammered in to metposts. Create a rough layout to help you to visualise the size.

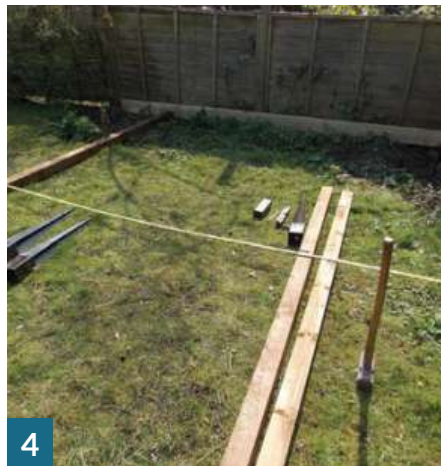






### What you will need:

- Tape measure
- Spirit level
- Sledge hammer
- Drill/driver
- Jigsaw
- Hand saw
- Hammer
- 108M 22 x 150mm treated carressing
- 6 x fence posts – 75 x 75mm x 2.4m
- 6 x Metposts – 75mm x 600mm
- 3 x OSB board – 2,440 x 1,220 x 18mm
- 1 x mineral roofing felt – 10m x 1m
- 6 x T hinges
- Screws and tacks



**4** Lay out a plank and two posts to determine the post positions. The frame must be smaller in area than the roofing boards, to ensure an overhang.

**5** It is advisable to buy a dedicated drive tool to suit the posts. It makes the installation easier and avoids any damage to the post socket.

**6** Hammer in the back two posts, then adjust for level.

**7** Then, cut a plank to length and temporarily screw it to the top of the two back posts. ➤





**8** Next, mark the bottoms of the posts for the positioning of the first plank.

**9** With the first plank cut to length and fixed, there is now no need to measure. Cut two blocks of wood to the required gap size and move up with the planks as they are screwed into position. Leave the planks at their full length and simply saw back to the post after they are installed.

**10** Once up to the required height, mark the plank at the top of the posts at an angle, then remove from the frame.

**11** Use a jigsaw to cut the plank along its length. The two angled pieces should create a 'fall' for the roof.

**12** With everything trimmed, manoeuvre the back into position and knock it into the metposts alternately, until the posts are fully seated.

**13** The first front post can now be positioned.

**14** Should the ground around your site rise up at this point – like mine does – put the post a long way in to level up with the back.

**15** Temporarily fix the front roof plank to the front post and attach the first plank.

**16** As before, use spacers to determine the positioning and cut back the planks to the post.

**17** Then, repeat the process for the other side and front.

### Storing wood

Having built a store, you need to make sure you keep the right sort of timber in it. Stacking correctly is important. Make sure you not only stack timber neatly, but also ensure there is ventilation between the boards and blocks of wood, so it all gets a chance to air dry properly. Once the wood has a long enough period to dry, you will need to complete the drying ready to work it. Often the best way is to cut components oversize and bring them into the house and stored 'in stick' – under the bed is good!





**18** Here, you can see the planks all trimmed back and the roof planks put in place.

**19** The back is a long span and needs tying together. Rather than installing another post, use an offcut to support a plank screwed to each piece.

**20** Cut a post in half lengthways to support the edges of the roofing boards. My roof did require more support to stop any sag towards the middle, but it had to wait – torrential rain was forecast and the thought of soggy orientated strand board was not appealing.

**21** The roofing felt can be quickly cut. You may need additional help to lay the felt roofing down.

**22** The gate width is determined by the length of the available offcuts. Some ribs were added to the corners of my shed to tidy up the edges.

**23** Use a pile of offcuts to help hold the larger gate in the correct position while fitting the hinges.

**24** Next, screw a piece of hardwood to the smaller gate at the top and bottom. These simply lock the gates together when closed.

**25** Now, back to the roof. Use offcuts to make supports for a plank edge.

**26** This runs the length of the shed and stops the roof boards sagging in the middle.

**27** Now, with stage one finished, it's just a path, a floor and storage shelving to go! ■

### Neil Lawton

Neil is a woodworker/turner who specialises in the use of reclaimed and recycled materials in his projects and seasons native timbers for his turning work. He works from his home workshop in York, North Yorkshire and works part time in the Design Technology department of the local school.

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# Routed oak fanlight frame

In a well framed article, simply dripping with useful advice [the Editor](#) just proves he can't break through that 'glass ceiling'

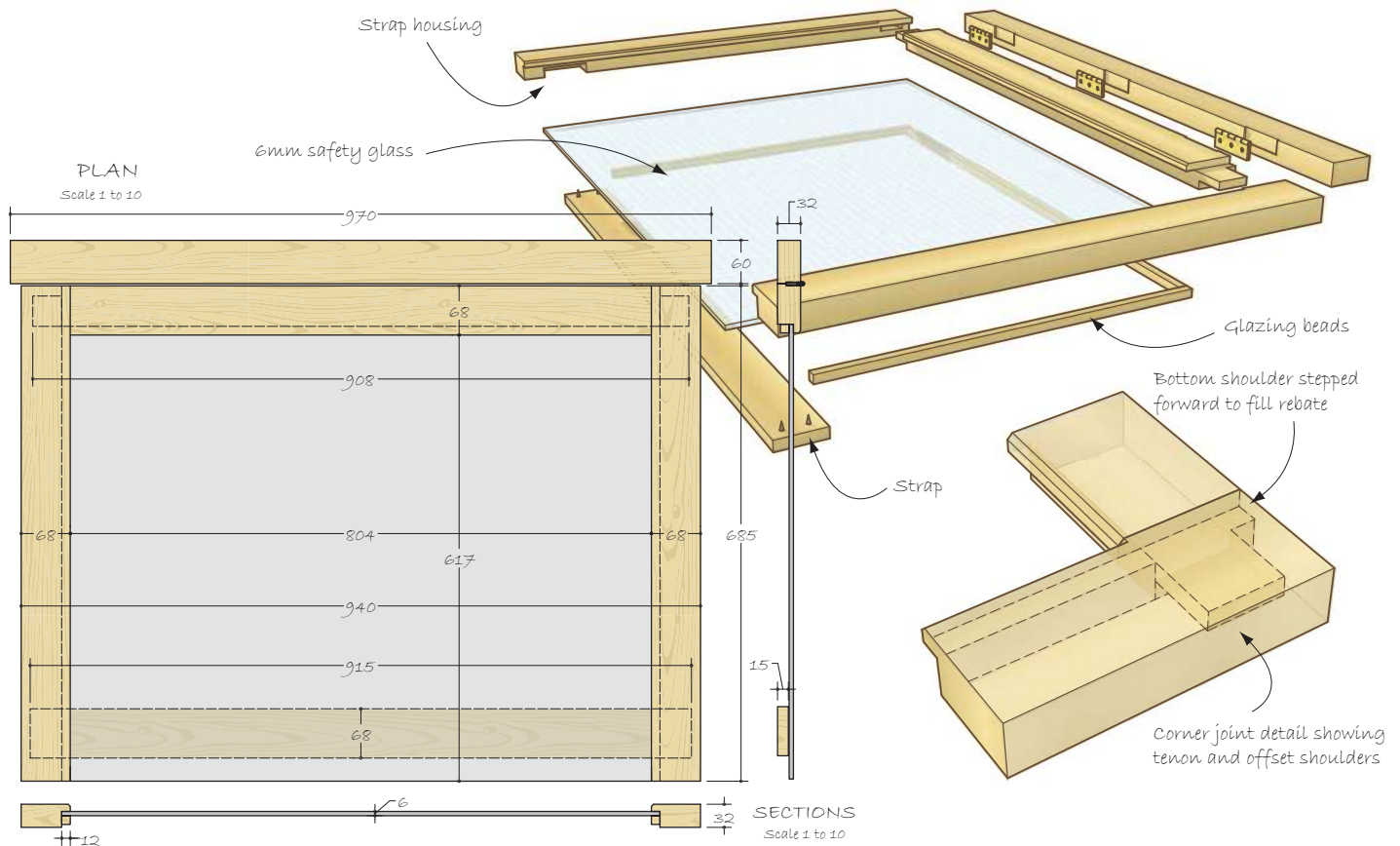
**O**ur living room is actually situated below ground – handy as a nuclear bunker should 'the bomb' go off... However, there is one fanlight window which I made in softwood many years ago and which is now rotting through. Time for a proper solution, ah – uPVC I thought, but no, the glass works told me it wasn't practical to make one up. That is like 'a red rag to a cabinetmaker' – never tell me no! I had already made a uPVC boxing to fit around the brick base I once built, now what I needed was a wooden frame solution that would sit on top.

**1** If you have never 'worked' uPVC before, it is remarkably easy. I found some on eBay and cut it to size on the tablesaw, with the blade set well down and then siliconed and screwed two layers back to back with twinfast screws.

**2** This stuff actually planed up beautifully so I had nice neat square edges. The boxing would be fixed to the brick surround on three sides with screws and masonry plugs and any overhang carefully trimmed off.







**3** The frame is an inverted U-shape because there cannot be frame at the bottom edge where the water runs off. Here a strap of oak (*Quercus robur*) is fitted underneath instead to maintain the frame integrity. The first job was to machine the glazing rebate with a big Wealden tenoning cutter.

**4** Next the two top corner joints were marked out very carefully. I didn't want to mess this up so I checked and rechecked what I was about to machine up. The frame needed to sit on the uPVC boxing with a slight overhang at each side and more so at the front.

**5** The two sides would have blind mortises and recesses for the oak strap at the bottom end. Both sides were clamped together in the vice so the router could ride along the top. Two fences kept the router on track and a 12.7mm straight cutter was used for 'ramp' cutting (plunging while moving the router along).

**6** The strap recesses were cut one side at a time, then the router was moved across to make the other recess. ➤



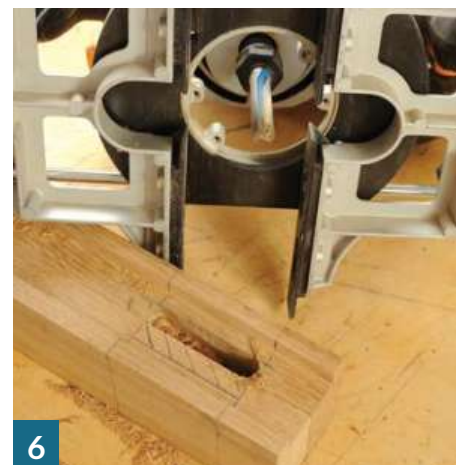
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4



5



6



**7** The result was two recesses that would need the ends squaring up. So far, so good. The ends of the frame were already cut to length.

**8** To square them nicely I used a small router and a 6.4mm straight cutter and a router T-square. The corners would need a slight nicking out with a chisel to complete the joint.

**9** A completed strap recess which needed to be the correct depth allowing for the glazing which would sit directly on top of it.

**10** The same machining procedure was used to create the mortises at the top of the frame. Because they were near the top edge of the frame I left extra length for the router to run on. I swapped to a 9.5mm Trend pocket cutter designed for deep mortising. The cutting edge is only at the end, allowing free cutting in the mortise.

**11** The next job was to make two tenons on the top rail. See the drawings to understand the detail of the frame joints. In order for the tenons to fit tightly I bandsawed on a line that would make a curly shaving that told me I was at the correct width.

**12** The tenons needed slight correction to fit nicely so I used a small shoulder rebate plane to clean up both the faces and shoulders of the tenons.

**13** The result was two stepped mortises and tenon joints both left and right handed. The datum distance when setting out was the lower shoulder of each tenon as this would need to be watertight being on the upper face in situ.

**14** I used Titebond III waterproof aliphatic resin, which should form a good long term weather resistant bond. Any surplus needed to be cleaned off promptly so the oak surface would be clean and ready to accept a finish.

### Top tip

• The fanlight needed to be secure so I chose brass sprung sash catches with loop handles to undo them. However the catch bars had the ends bevelled. So a bit of crude re-engineering by drilling out the pivots and turning the bars over so the bars would latch properly and I used small diameter bolts and nuts to act as pivots which did the trick.





**15** The whole frame was glued and clamped together with the lower strap dry fitted and clamped in place. Then the frame was measured corner to corner to check it was square and then the frame was left on a level surface to dry so it would stay flat.

**16** The front edge would benefit from a bevel profile for appearance's sake so I used a router trimmer with a Trend 45 degree bevel cutter to run around and create a pleasing amount of bevel profile.

**17** I had a piece of 6mm obscured wired glass cut to fit the glazing recess. I needed to check the fit and that the strap would lie properly over it and the whole underside needed to sit level on the uPVC boxing.

**18** The next job without the glass in place was to make the hinge recesses in both the frame and the wall bar that it would hinge off. I chose brass hinges to limit the corrosion risk as the fanlight would not be subjected to much opening.

**19** Because the hinges were 100mm long I made up a router sub base to prevent the router slipping into the hinge recesses. A cutout in the centre meant I could see where the pencil lines were that I needed to machine up to.

**20** All the oak components were given two coats of tough all-weather Tonkinois varnish and the frame and bar were hinged together. Note the brown E-seal running along in the deliberate hinge gapping.

**21** The frame rebate was sanded to roughen the varnish and a line of clear long life glaziers silicone (not the standard stuff) was run around the rebate and the strap screwed into place without glue in case the glass ever needs to be replaced.

**22** The last job before installation was predrilling the oak strip to hold the glass in place and using copper nails to pin it in place. To avoid breaking the glass the punch used to drive the pins was sitting on a thin strip of wood. Now some waiting for a break in the weather and then I could screw the bar to the bay window wall before reattaching the frame, fitting some catches and the job was done at last! ■



15



16



17



18



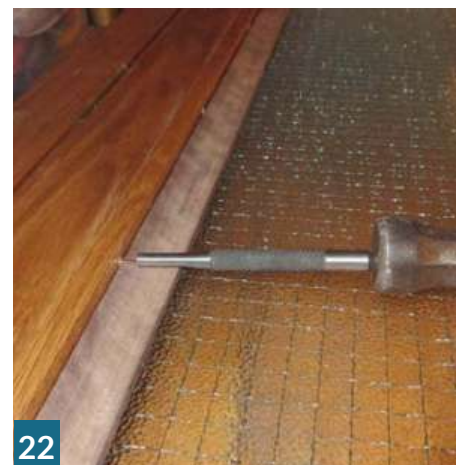
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20



21



22



Lisa's pair of brown oak chairs



# Insight Chair making

Peter Sefton shows us how his students tackle that most complex of all furniture skills – chair making

**F**urniture making is an all-encompassing craft that covers a wide range of skills, traditionally set out in different disciplines or trades, namely; cabinetmaking, carving, guilding, veneering, chair making and upholstery. All of these disciplines require their own skills, but one of the most challenging is chair making.

Dealing with all the compound angles and rakes, both in the seat and

back joined by curved and shaped rails, give the furniture maker a few headaches. Two of this year's students at my School made chairs as part of their course, both chairs required prototypes to resolve the constructional issues, but most importantly to ensure the chair was both comfortable, strong and attractive.

## Lisa's chair

Lisa made a pair of chairs using the same main framework, but with different treatments of the back support and seat coverings. Brown oak (*Quercus robur*) and sycamore (*Acer pseudoplatanus*) were the two timbers used. The seat was laminated plywood and then upholstered. The back legs were compound curves cut in both directions from 75mm thick oak, to give real movement and a large splay on the back frame. The front legs replicated the lower section of the rear legs. The back splats were a large laminated section of book matched ripple sycamore jointed with stainless steel dowels. The accurate drilling and positioning of the dowels was difficult, but gave a great effect. Traditional mortice and tenon joints were used as the main construction, some of which were through-wedged used for both strength and visual interest.

The laminated ripple sycamore backs gives good support



Plywood prototype chair

Right: The finished prototype chair stained and sprayed



PHOTOGRAPHS BY PETER SEFTON

## Kevan's chair

Kevan's finished chairs were made from constructional walnut (*Juglans nigra*) veneer to complement his dining table. A series of laminated jigs were produced for the legs and the backrest. The one pictured was a birch (*Betula pendula*) plywood prototype, which was a quick way to produce the mock-up chair to check the overall size and aesthetics. This is a common practice as is using MDF if its strength allows. ■

## Peter Sefton

Peter Sefton is a well-known furniture maker who runs courses in fine woodworking, teaching and mentoring students at the Peter Sefton Furniture School. He also owns Wood Workers Workshop and he is a Liveryman of the Worshipful Company of Furniture Makers.  
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# Woodland ways

Mistletoe in  
a bepoplared  
landscape



PHOTOGRAPH BY WIKIPEDIA COMMONS

## Matchwood, mistletoe and fireproof flooring

PHOTOGRAPHS BY GARY MARSHALL, UNLESS OTHERWISE STATED

**Gary Marshall** looks at matchwood, mistletoes and fireproof flooring in this month's Woodland ways

**P**oplars (*Populus spp.*) are closely related to willows (*Salix spp.*) and similarly come in many shapes, sizes, species, sub-species and varieties. In Britain, there are just two poplar species considered to be native – see Woodland ways, issue 5 *Woodworking Crafts* – the aspen (*Populus tremula*) and the black poplar (*Populus nigra*).

### Other poplars

However, other poplars often dominate the landscape. You'll have seen tall lines of lombardy poplars (*Populus Nigra var. 'Italica'*) – always planted – never naturalised. These trees are fastigate – ie. upward pointing, artist's brush shaped. They are often seen in rural settings as shelterbelts. They screen buildings or are seen as prominent 'living landmarks' in otherwise bland settings. Some think they are just too exotic, appearing unnatural in the British landscape. You'll also see many blocks, lines and screening/sheltering belts of hybrid black poplars (*Populus x Canadensis*) in the countryside. They are less pointed than lombardy

poplars. They're often grown in grid-like plantations of uniform trees. Some are well formed with few errant shoots and snags, like 'serotina'. Others, including the 'railway poplar' of southern England 'regenerata', are scraggy, rangy, untidy trees. Most are very fast growing and tall, with regular upward-sloping branches – sometimes almost conifer-like. Landowners planted blocks of hybrid poplars from the 1960s hoping for a quick return. They produce firewood in 10 years, pulpwood in 20 years and timber in 30+ years. Many were planted on wet soils for matchwood, up to the 1970s. Most hybrid poplar wood is not that durable – but it is light. It's alarming how many plantations have been left to collapse under their own weight or have blown apart in turbulent years – particularly, during and since the Great Storm of 1987. Rare bird-spotters also take note: golden orioles (*Oriolus oriolus*) and hoopoes (*Upupa epops*) have both been seen in English poplar plantations.

### Balsam poplar

On warm days in spring, sniff out



Lombardy poplars in an English landscape



Hybrid poplars as a shelter belt

balsam poplars (*Populus candicans* or *Populus trichocarpa*). These trees – also known as Balm of Gilead – have largish, shiny, scented emerging leaves, giving off a heady, pervading and spicy fragrance. Research is also being carried out to assess the medicinal properties of 'propolis', a substance made from certain poplar buds.

### Aspens, grey and white poplars

Aspens, grey and white poplars (*Populus tremula*, *Populus canescens*)



and *Populus alba*) all have leaves that rustle and catch the light in the slightest breeze. Grey and white poplars are tall, fast growing trees but the aspen tends to be somewhat smaller, colonising corners of – often ancient – woodland and ‘pioneering’ neglected land. These beautiful trees sucker like mad – and can be a pain in lawns and playing fields.

## Black poplar

The true native black poplar is a rare and endangered species in many parts of Britain. It was selected for its timber. Uses included some cruck framed housing, flooring near fireplaces and in oast houses – because of its fire-resistant qualities. It’s also shock absorbent, light in weight and colour. Other uses included rifle butts, wagon bottoms, brake blocks, stable partitions, clogs, furniture and fruit boxes. Numbers have dwindled and it’s overlooked for timber, and often considered a nuisance because of its messy, downy catkins. Many male and female trees became isolated from each other, so natural regeneration by seed could not occur. Regeneration mainly relied on a few cuttings from male trees, taken by man. In recent decades conservationists have recognised its importance and new truly native clones have been planted in suitably wet or riverside sites. Beware though, never plant poplars anywhere near your property – all poplars’ roots can run causing structural problems.

Travelling homewards along the straight, poplar lined roads of France some years ago, we entered Normandy. Abundant orchards there are full of mistletoe (*Viscum album*) and so are lines of poplars – and many limes (*Tilia vulgaris*) too. They’re a real landscape feature. This got me thinking. Why, in Britain, where we have many orchards and specific areas



Clone of truly native black poplar – on author’s land

**Right:** Balsam poplar

of mistletoe, have our poplars not all been colonised by this seasonally beloved parasite, as in Normandy?

## Mistletoe

Ever since, I’ve sought clumps of mistletoe high up in poplars. I found some but nothing like the abundance seen in France. Then, I stayed on a hop farm beside the River Teme near the Worcestershire, Herefordshire, Powys border. Here apple and fruit orchards almost sink beneath the weight of mistletoe. Many other species of tree are similarly smothered, including poplars. Are there a higher number of mistle-thrushes here to plant all those sticky seeds in the berries, I wonder?

Mistletoe, although considered a native species, just like the black poplar, is strangely parochial in its occurrence. Just over the Welsh border, in Powys, there’s none! However, 10 miles up the river from where I stayed is Tenbury Wells, the ‘capital’ of the mistletoe ‘industry’. In December, on National Mistletoe Day,



Mistletoe madness



Mistletoe in hybrid poplar



Suckering white poplars

a bunch of mistletoe is cut down. In a multi-faith ceremony, thought to have its roots in Druidic times, the bunch is cast into the river, without touching the ground, under the Mistletoe Queen’s guidance.

Hoping you find uses for some of this mythologically seasonally important plant during your winter festive celebrations! ■

## Gary Marshall

Gary has had a life-long interest in woodlands and the countryside. He trained in countryside management and subsequently ran a company working with the local County Councils and Unitary Authority and their Countryside and Rights of Way Teams, as well as a wide range of conservation organisations.  
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PHOTOGRAPH BY LEE STOFFER

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MICHAEL T COLLINS

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**ISSUE 8  
ON SALE  
26 NOV**

## Lee Stoffer's reindeer

- Carve a house sign by Margaret Williams
- Michael T Collins makes a cabinetmaker's mallet
- Fretsaw alphabet magnets
- Wood storage shed – part 2
- Louise Biggs makes a memory box
- Anne Marie O'Sullivan's willow work

**PLUS:** Woodland Ways, Woodworking Geometry – Staircases part 2, Reader Group Test

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## SIZES DON'T MATTER

I notice in the magazine that imperial measurements creep into some projects – from the USA I think – and older colleagues of mine normally use feet and inches, unless they were engineers. I kind of hop between the two but as I'm dyslexic, measuring with woodwork can be quite a problem. What about people with partial sight as well? What I do, whenever I can, is to use objects with known lengths that I can copy, use plenty of length stops and blocks on the saw table and elsewhere, so I end up with predictable sizes. I find a combination square handy, because I can set lengths and ignore the scale, using a marking gauge more often and I've even made myself a wooden depth gauge, so there's no scale to confuse me. Do other readers have trouble interpreting numbers? That's not meant to be funny – really.

**Gary Newbold**



PHOTOGRAPH BY PETER SEFTON

Using the component's depth to set the gauge



PHOTOGRAPH BY MARK LIDDELL

Keeping glue off the surface using masking tape

## PREVENTING GLUE MARKS

It's often suggested that taping over joints stops wood finishes from getting into the joint and ruining the glue bond, but you can do the reverse thing and tape either side of any joint with masking tape so the glue oozes onto the tape, not on to the surrounding surfaces and risk spoiling it – or at least making it harder to clean up and possibly raising the grain with a damp cloth when you don't want that to happen. By the way Anthony, great magazine, keep up the good work!

**Mark Liddell**



## ALL ABOUT THE BASE

I often find I'm trying to rout areas that are too wide for a router to span without falling into the space and creating an unexpected divot. Now, I often fit a false base to my router that is wider so this can't happen. It makes the job so much easier not 'living on the edge' so to speak.

**Tina Herrey**

*(Funnily enough, I used this technique for my router fanlight project on p.52 of this issue, so here is that pic once again – Ed)*



PHOTOGRAPH BY TINA HERREY

An extended base spans awkward gaps



PHOTOGRAPH BY FRED MCNULTY

A hinge can double as a marking square

## SEEING THINGS FROM BOTH SIDES

If I'm marking components on adjoining faces of smaller pieces swapping a try-square over from face-to-face to make the lines seems a bit pointless, but I've found a large hinge folded inside out so, with the head recesses outwards, actually works as a marking square. This works with an internal door hinge without any taper to the hinge flaps. A couple of spots of superglue down the knuckle line when it was set at 90° means it stays set and always handy for marking. I might try and find a large table flap hinge to make a larger version. There are purpose made squares on the market but this is a lot cheaper!

**Fred McNulty**

## DRAWING ROUND THE BEND

I am well aware of the existence of flexible rulers, I even own one! However, rather than dig it out from wherever it's currently hiding my workshop, it's often easier to improvise. And what better to use than a copy of one of my favourite magazines, on this occasion *Woodworking Crafts*. Just bend it round to follow the curve, in this case a concave piece I needed to bandsaw up for a project I was working on. The technique is quick and effective provided you compress the magazine so that your pencil tracks down the edge.

**Chris Grace**

*(Mmm – a rather obvious attempt to sway editorial opinion, so well done! – Ed)*



PHOTOGRAPH BY CHRIS GRACE

It is such a versatile magazine!

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A selection of the shoehorns I have made. The piece of merbau at the bottom is shorter than the 500mm long and 42mm square one that I used. The shoehorn at the top has the most suitable shape as it curves downwards at the scooped end and at the handle



## Carve your own SHOEHORN

John Swinkels makes this shapely shoehorn from an offcut of merbau

**M**erbau (*Intsia bijuga*) is an Asian timber, which is also known as kwila in Australia. The wood is medium hard, attractive and durable. For this project I decided to use an offcut of merbau but I have made dozens of wooden shoehorns from native Australian hardwoods such as spotted gum (*Corymbia maculata*) and flooded gum (*Eucalyptus grandis*). Because of their hardness none of them are easy to shape but as they are strong and tough they are eminently suitable for shoehorns.

Shoehorns are used by people who have difficulty bending down or find it hard to get the foot into the shoe. I make them long and slender so that they are not heavy. The part that is held should fit the hand comfortably and the open-spoon-shaped bottom part should be thin so it can go between the heel and the shoe. Although I incorporated a hook in the handle of the shoehorn so it can be hung up, it

is still comfortable to hold. A hole with a cord passing through it is probably a better option as the hook could easily break off.

I used a number of hand tools – drawknife, rasp, files, gouge and mallet – to do much of the shaping but used a bandsaw and a wood lathe for some of the steps. A very handy implement for holding the work is the Triton Superjaws – or a copy – because I can walk around it or pick up the clamp/vice and turn it around towards light falling on the part that I am working on. It can be seen in some of the photos here.

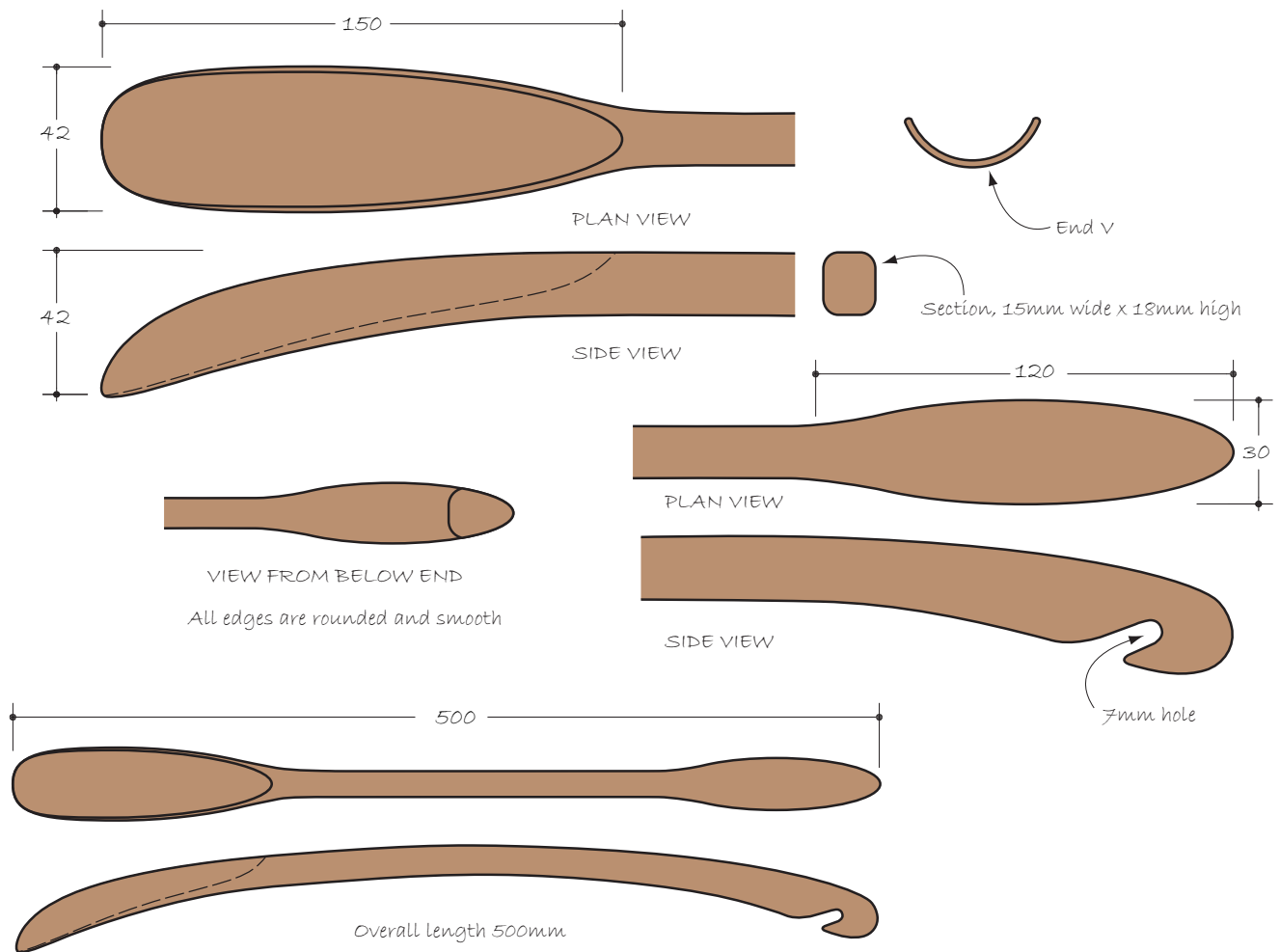
A handcrafted object like a shoehorn does not seem to fit the category of conventional woodworking, as that nearly always involves joinery, nor woodcarving, although I do use a carving gouge to hollow the business end of the shoehorn. Neither does it fit in woodcraft, as that deals more with crafty items of an ornamental nature.

### What you will need:

- Bandsaw
- Drill press
- Lathe
- 25mm-wide shallow carving gouge
- Mallet
- Wood rasp
- Bastard file
- Second cut file
- Drawknife
- Scrapers
- A wooden cylinder with coarse and medium grade abrasive cloth wrapped around it
- Range of abrasives
- Beeswax

It is probably most at home in woodware, in which category you can find spoons and spatulas, spurtles and scoops, practical objects for everyday use. Their creation also involves the use of gouges and abrading tools. ➤

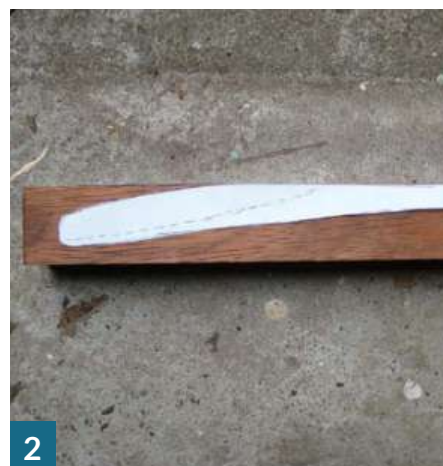




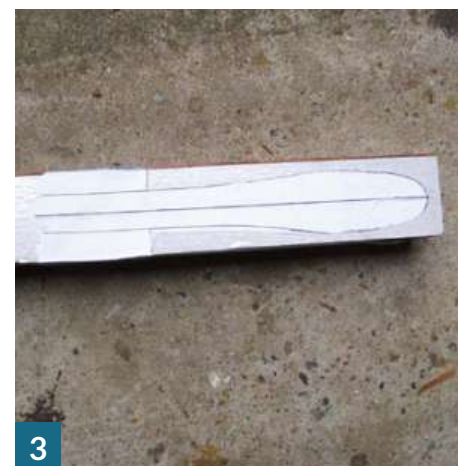
**1** The section of merbau that I used came from a scrap bin of a staircase manufacturer. The manager allows me to search his bins and every time I go there I find something useful. I drew my design on paper and used double-sided tape to attach the patterns to the wood because pencil lines did not show up very well on the dark brown timber. The top view of the spoon end is shown here. The hollowed section is 150mm long, about 35mm wide and 15mm deep. If you are making one for a specific person, the width and depth should be adjusted to suit their heel and shoe.



**2** A side view of the spoon end. Note that, like the handle end, it slopes downwards; that makes the shoehorn easier to use.

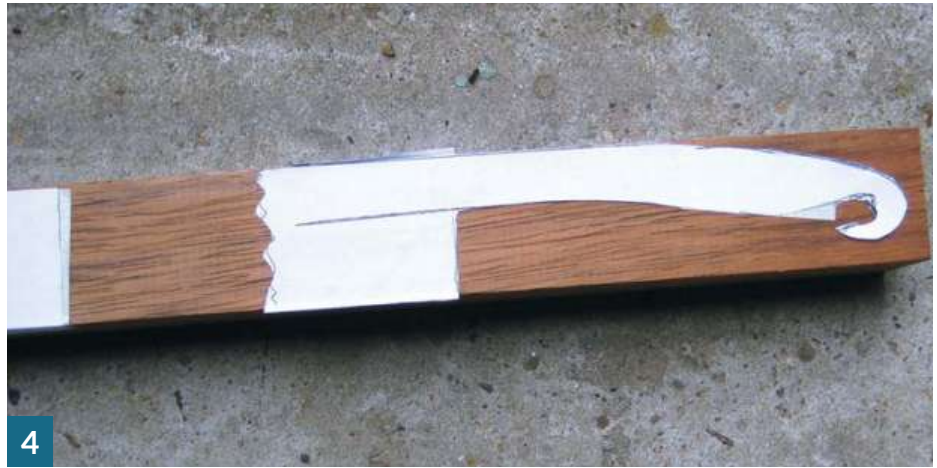


**3** A top view of the handle section. From the 15mm wide stem, it widens to 30mm. It should be shaped so that it is comfortable to hold.





**4** A side view of the handle section. In between spoon and handle the stem – 15mm wide and about 18mm deep – will be straight and its edges rounded. Since both the front and handle curve downwards from the stem, the shoehorn is held away from the leg and thus is easier to use – easier than if the implement were straight. I believe it will also look nicer with that gentle curve built into it.



**5** The 25mm shallow gouge that I have is more solid than traditional carving gouges. It is at least 40 years old and may be the type that was once used by patternmakers. I clamped the spoon end in the Superjaws vice. The jaws are rubber faced and hold the wood immovable during the shaping of the channel with the gouge, meaning I can walk around the job. In a bench vice you would have to reposition the job several times.



**6** I could spend more time on it than the five or so minutes it took to get to this stage to make it smoother. With a round scraper I could have improved it enough to make it acceptable for use, but I decided to make use of the lathe instead.

**7** A friend at the woodturners clubhouse took my picture while I was removing waste from the back of the spoon. The homemade drawknife is a great tool that is not much in fashion these days but can be very useful for this kind of work. However, you can also cut away waste material with a handsaw or coping saw.



**8** I had to work carefully with the grain so as not to remove too much wood. A fellow turner gave me two blades of high-quality tool steel that only required a little sharpening and the addition of handles to create a brilliant tool.

**9** Next, I used a sharp wood rasp to round the back of the spoon, always pushing it into solid wood, not off an edge as that would result in breaking parts from the job. The rasp quickly did its share of the work but it left deep scratches so I followed that with a coarse wood file and lastly with a medium cut file. The medium file is shown in another photo. The procedure is like using grades of sandpaper because the files, used in succession, remove scratches left by the previous tool. ➤





**10** On the lathe I fitted a turned rod on which I have taped coarse and medium abrasive. The spinning tool quickly smoothed out any unevenness left by the gouge. This photo shows the coarse stuff. The next photo shows the finer abrasive at the right side. It makes the hollowed part quite smooth.

**11** The visible grain pattern shows that a nice curvature has been achieved. As I sanded the spoon on the spinning aid close to the front, I lifted up the handle to create a downward curve close to the edge. I reduced the front edge to about 3mm thickness.

**12** With the inside shaped, I tackled the back once more to make sure the spoon would be thin enough to serve its purpose.

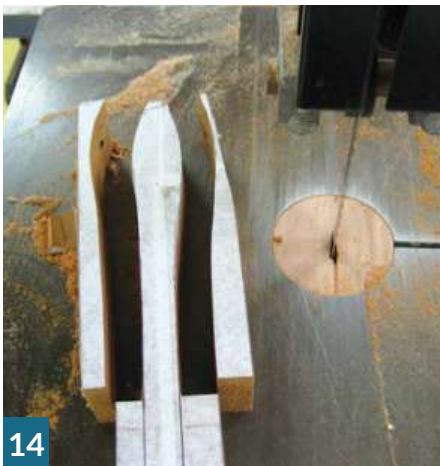
**13** I drilled a 7mm diameter hole in the handle. Note that it is too close to the end and that it would have been better if I had left more wood between the hole and the end of the handle. I had no problem with this when I made eucalyptus shoehorns but with the merbau the end broke off and I had to glue it back on.

**14** If you do not have access to a bandsaw you can do the cutting out with a scroll saw. Before I had a bandsaw I did the same thing with a coping saw. It is a lot slower but with care it can be done that way.

**15** Waste was removed from both sides and above and below the handle and a slot was cut towards the drilled hole. It is obvious that there is a weak section that can result in part breaking off, which it did.

**16** On the handle, I again used the rasp, very carefully, and the coarse and medium cut files.

**17** Anna took this picture when I was using the tool in the draw-filing way, moving the tool not along its length but drawing it up and down. Note that, although I wrote about the Triton Superjaws – invented by an Australian – I am using an Asian copy that works as well.







18

**18** If there is a risk of breaking the job, I support it against my chest. At this stage there is still an uncut square section between the spoon and the handle by which it can be securely clamped.



19

**19** Back at the bandsaw, I removed unwanted parts of the stem.

**20** The wider part of the handle was clamped in the rubber-faced jaws of the vice. They held the job well enough so I could round the corners and make the stem smooth, all the time supporting the spoon end against my chest. After all tool marks had been removed, I sanded the shoehorn with 240 and 400 grades abrasive.

**21** This image shows two abrasives, the jar with beeswax dissolved in methylated spirits – it becomes a paste – and the cloth with which I applied some wax to the job. Although I used merbau for this project, I'll stick to using Aussie hardwoods in future as



21



22

they are stronger and, in my opinion, preferable for wooden shoehorns.

**22** Four homemade scrapers. The two on the right were once part of a tenon saw. The concave curvature on the right-hand one makes

it suitable for scraping the handle of the shoehorn. The two on the left were made from some scrap steel sheet, not tool steel, and they work very well.

**23** Voila – the shoehorn has been completed. ■

### John Swinkels

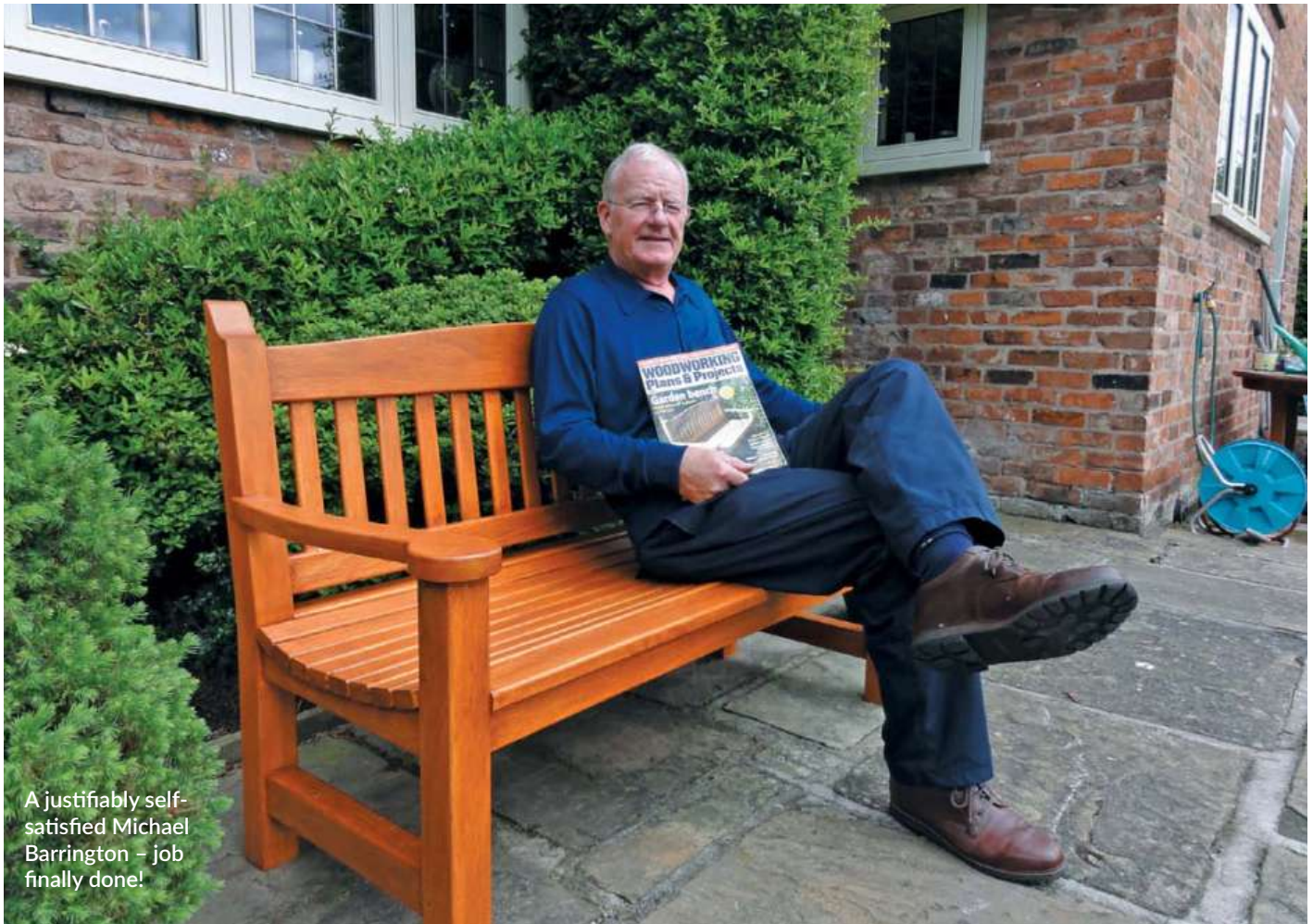
After 11 years of turning, John still considers himself an advanced beginner, as he continues to learn and experiment with various techniques. He has combined turning with leather and incorporated pewter as a decorative element. John says that the possibilities are unlimited and the enjoyment of the practice is still there, and also enjoys the odd spot of woodcarving as well.



Email: [swinkels38@yahoo.com.au](mailto:swinkels38@yahoo.com.au)







PHOTOGRAPH BY MICHAEL BARRINGTON

A justifiably self-satisfied Michael Barrington – job finally done!

# It's never too late to learn

Ages ago, **Michael Barrington** got in touch and we corresponded about Jim Robinson's past bench project in WWP. Here, we look at Michael's very impressive result...

**A**part from the odd bit of DIY, over half a century had flown by since my last woodworking project, a coffee table made in my fourth year at school. At least my mother liked it! Then last year, for no reason at all, other than having a good sized garden, I took a liking to garden benches and decided to have a go at making one. I soon discovered that while there are lots of books around on how to make the stuff, most of the bench designs were simply awful, and most authors assumed that you'd served a seven-year apprenticeship in carpentry. However, it wasn't long before my internet research turned up a copy of the May 2014 edition of *Woodworking Plans and Projects*, which featured a rather handsome garden bench on the front cover.

I immediately sent off for a copy and took out a subscription. Jim Robinson's plans turned out to be reasonably straightforward to follow and any queries I had were promptly answered by Editor Anthony Bailey. Enthused, I set out to equip my workshop.

## The workshop

A shopping list of the required hand tools and safety gear was pretty straightforward but power tools were a different matter. As I muddled my way into this new world I soon realised that a router wasn't only something that connected your computer to the internet. I ended up with the following: mortiser, tablesaw, bench press, bandsaw, plunge router and power sander. I already owned a power plane.

## Timber

I sourced a local timber merchant and his advice was to use idigbo (*Terminalia ivorensis*) hardwood. Time will tell if this was good advice, all I can say is that I found it easy to work with. Before ordering the wood I had some recalculating to do regarding the cutting list provided in the plans. To the horror of traditionalists, I'd decided to use floating tenons with an American 'Mortise Pal' Jig, and therefore had to reduce the lengths of the timber given in the cutting list to allow for this. Also, I didn't have a planer thicknesser so the timber merchant had to cut and finish the wood. This proved to be an expensive exercise, labour costs no doubt accounting for a significant part of the bill.



## MAKING THE BENCH

I closely followed Jim's plans but there were a couple of things I did differently. Rather than using a bandsaw to cut the back legs, I used an American technique I'd seen on the net. It involved attaching the marked-out piece of timber to a 1/4in plywood carrier and running the wood and carrier through the tablesaw. It worked perfectly. The mortises in the top and bottom back rails were cut using my hand held 1/2in router guided by the 'Mortise Pal'. The mortises were left with rounded ends, unlike Jim's whose were squared off by hand. The back slats were then rounded off on the router table using a round over bit. Unlike Jim, I filled the hairline gaps, where the back slats fitted in the back rails, with flexible wood filler to keep water at bay. Although the carved lettering on the back of Jim's bench is quite charming, I decided it was beyond my current level of expertise.

### Finishing touches

Using floating tenons meant that I had to drill twice as many 6mm holes and insert twice as many dowels as Jim, one dowel glued into each side of the glued floating tenon of course. I made my own dowels using a dowel plate I bought, and also invested in a hand-held router to round off most of the square corners.

I then made the biggest mistake of all. I finished the bench off with an oil-based preservative. I tested the 'gold teak' colour on an offcut and it looked OK. However, after the three required coats the bench acquired the colour of Tony Blair after he'd been on a sun bed. Anyway, apart from this, I found the whole exercise so interesting and enjoyable – it won't be another 50

Right: The Barrington bench glued and assembled, almost there. (I like the ship in the display case – Ed)



Note the swept seat shape at the ends and the middle rail

years before my next project, in fact I'm getting on with another bench right now.

### Ed's final comments

- 1) Michael took out a subscription, which you can do with this our successor magazine *Woodworking Crafts* and get it delivered to your door every month and save money! – see Subscription on page 25.
- 2) Readers can always contact me by phone or email to discuss projects and technical problems, that's what I'm here for!
- 3) Idigbo was the timber used, it has moderate durability so a really good finish coat is essential and the bench should be stood on a solid surface such as slabs rather than grass, which can promote rot in any wood – see our Tonkinois group test in issue 6, page 67.
- 4) Michael got himself fully equipped first, but start with one of our simpler projects and gain experience before tackling something big like he did. ■



Partway through chopping out the recess to take the arm

### Lessons learned

- The mortise jig worked very well, saved time and virtually guaranteed a neat, clean joint. Time will tell whether the joints are as strong as traditional joints.
- Do not be tempted to buy extensions for sash clamps – even expensive ones. They bend under pressure at the joining point and therefore apply uneven pressure, which can result in your work being squeezed out of shape.
- Most router tables for sale online look as if they are worktop height. Beware... they are, in fact, child-sized, made either for you to operate while on your knees, or dangerously at face level on a worktop surface! I made a wooden stand for mine to bring it up to worktop level.
- Fixing most routers to a router table is a nightmare. Also, adjusting the cutter height of most routers, when eventually fixed to a router table requires the dexterity of a mime artist. Manufacturers – get your act together.
- I later discovered that there is one brand of router that is both easy to fix to the same brand of table and can have adjustments made to the cutter height from above the table.
- I have yet to find an effective small, mobile dust collector with hose adaptors to fit all of my equipment.
- Before using a preservative, make sure you test a piece of wood with the same number of coats that you'll be using on the finished article.



Beautifully made and finished – well done Michael!





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# Small space woodworking

PHOTOGRAPHS BY GMC/ANTHONY BAILEY



## SPICE RACK

We told our poor old 'Ed' that he should spice up his life – he misunderstood us completely and livened up his spices instead – well at least he now knows his turmeric from his paprika...

Anyone who enjoys their cooking is bound to end up with lots of spice bottles that need to be organised so they are easy to choose from. This rack holds up to 14 bottles depending on size so gives plenty of space for storage and it looks good too. I chose rather knotty, slightly ragged pine (*Pinus spp.*) quite deliberately as it would look slightly more interesting than bland, unfeatured softwood.

**1** The first job was to glue some narrow boards together so I would have enough width to cut components from. The edges had to meet properly without gapping and I clamped a piece of wood to the front vice jaw so the boards were held between it and the cupboard sides behind.

**2** Afterwards the glue and protective paper placed underneath needed

to be removed carefully with a very sharp chisel avoiding 'dig-in', which would spoil the surface.

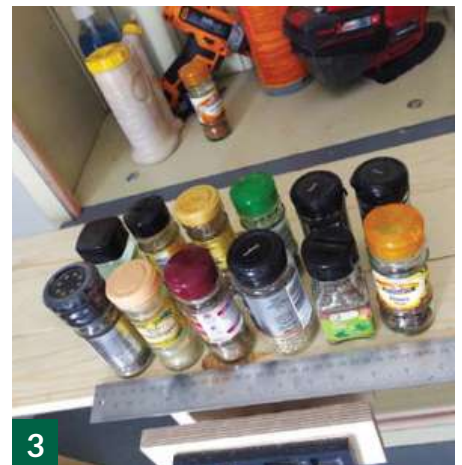
**3** By laying out the bottles and doing a bit of measuring I could work out the size for the base section. Because the ends would be the same width I could saw down the whole length of glued up board and plane the edge smooth. ➤



1



2



3



**4** Careful marking out with a try square followed and I cut out the base and both upright ends ready for shaping them. This handsaw has reasonably fine teeth for a clean finish.

**5** By marking down the centre of each end board I could then use an aerosol lid to mark out the middle curve. First I measured and marked the lid's diameter so I could accurately centre the lid on the board. An emulsion can with its bigger diameter proved to be just right for the radius that meets the centre arc. The bottom position of the radius was marked on both sides so it would be even shaped.

**6** My trusty fretsaw was used to cut the curves close to the pencil line but not over so there would be only limited cleaning up to do afterwards.

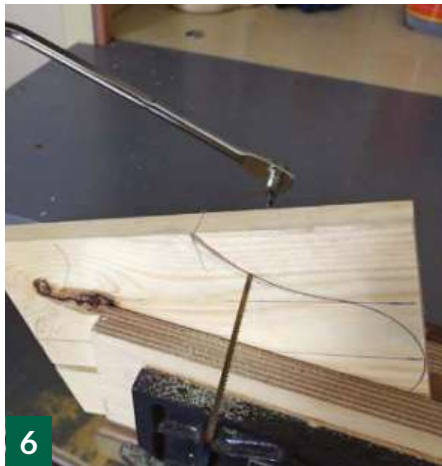
**7** I used a rasp to start with, followed by some medium grit abrasive paper. A more expensive 'hand stitched' rasp gives a much nicer cutting action than a standard rather crude 'machine stitched' type. Stitching refers to the tiny teeth raised in the surface of the steel which bite into the wood.

**8** By clamping the ends in place and cutting and fitting the centre divider and rails I could see how it was going to fit together. The main thing was to make sure the spice bottles would fit in alright. I wanted a large diameter dowel as a handgrip to pick the rack up so I used a 30mm diameter Forstner bit with its shallow point and smooth cutting action to make holes for the dowel to fit.

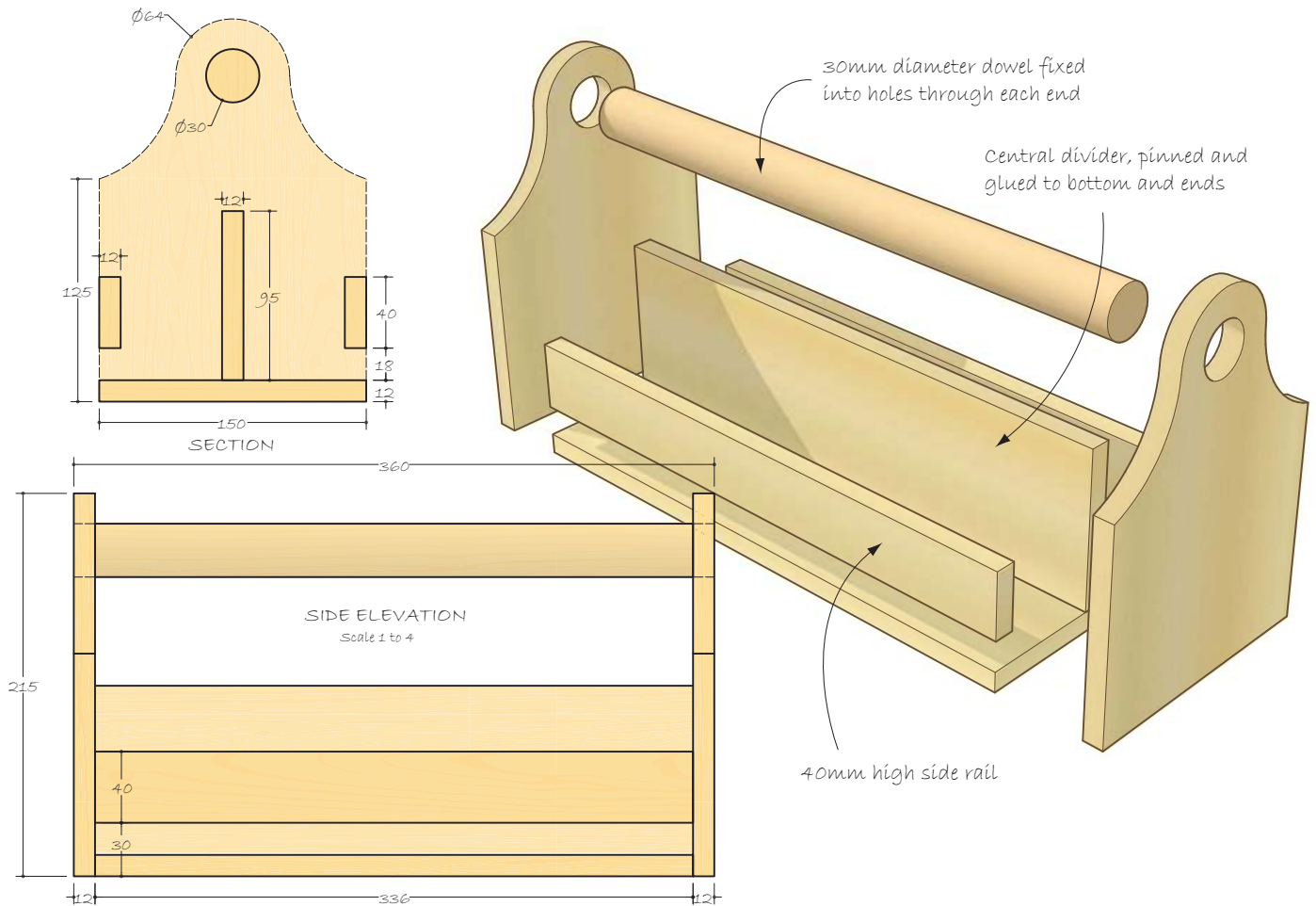
**9** All the faces were sanded smooth and any pencil markings got rid of. A perforated rubber mat is the best way to sand and stop the workpiece moving around and let dust escape into it.

**10** The outer rails were narrow sections that needed the sawn edges planing smooth. Putting both in the vice side by side made it easier to rest the plane on and get a level finish.

**11** The dowel was sold as 31mm diameter for some reason. I used the rasp with my thumb acting as a fence or stop, so I could reduce the diameter all round very slightly until it fitted both end boards.







**12** I had decided right at the beginning that the simplest possible fit was all that was needed. So slim French wire nail and a touch of aliphatic resin glue would be quite sufficient to hold it all together carpentry fashion.

**13** A line drawn across the top of the centre board acted as a guide for nailing on the outer rails.

**14** Once the glue was all set, I chose a slightly creamy white milk paint and wiped rather than brushed it on. I wanted to still see some grain through the paint and brush application would have masked it too much. In order to give the spice rack definition I used a wide, brown felt-tip pen to colour all the arrises – meeting edges. The result was still too bland so I decided to add a glaze effect over the whole thing.

**15** I used General Finishes burnt umber glaze effect but first I sealed the paint with a clear spray lacquer so the glaze wouldn't get mixed up with the paint but form a film of colour over it. I'm quite pleased with the result, it's bound to 'curry favour' at home! ■



12



13



14



15



# READER GROUP TEST

## Abranet Ace

Welcome to our **Reader Group Test** by members of our very own Woodworkers' Institute Forum



Abranet and Abranet Ace share certain things in common and look, to the untrained eye, to be identical. Abranet is composed of granules of synthetic aluminium oxide glued to a polyamide fabric mesh with phenolic resin. It comes in grits from P80 right up to P1,000 – a very wide range. Whereas Abranet Ace covers a more limited range from P80 to P800. It uses ceramic granular material to allow it to cut faster and last longer than the standard variety. All Abranets will successfully abrade almost any material you can think of, from hardwood to steel and anything else in between, such as plastics, lacquers and copper alloys. Abranet Ace does all this and more, making it even more efficient and productive than ever.

For anyone not familiar with Abranet, it is available in a variety of sizes including discs and attaches directly to hook-and-loop systems on sanders. Because it is a mesh, it stays cooler in use, it doesn't get clogged and is extracted across the entire surface area. It also works like a dream and makes conventional cloth and paper backed abrasives seem a little passé.

### Prices

#### 125mm

80grit: £50.57 box 50

120g – 600g: £45.06 box 50

800g – 1000g: £53.05 box 50

#### 150mm

80g: £58.84 box 50

120g – 600g: £51.46 box 50

800g – 1000g: £60.67 box 50

These are list prices inc VAT – discounts are available through Mirka distributors

Contact: Mirka Web: [www.mirka.com](http://www.mirka.com)

### TESTERS

Keith Baxter, Angus Lafferty, Dave Reilly, Jose Viveiros, Chris Murphy, David Child

We asked the testers a range of questions, some of which were graded, others needed more articulated answers rather than just scoring. We asked what was their experience using the products and if they had any problems using them.

**Keith Baxter:** I fitted the Abranet P240 to my DeWalt, removed the dust collection bag and fitted my workshop vacuum cleaner as suggested in the



David Child was impressed by the extraction advantage and long life of Abranet Ace

data sheet. A 'once over lightly' showed that no dust was being collected and while there was still a cutting edge on the disc, it was quite reduced and the disc appeared to be clogged. A fine dust remained on the surface of the piece, such that I was able to draw shapes in it.

I then cleaned out the sander and the sander dust bag, swapped the Abranet product for one of my 'usual' P80 grit discs and sanded section 1A for three minutes. Both discs released dust into the atmosphere and both released

more from the wood than the paint. The 'usual' P80 grit cleaned more of the section down to bare wood than the Abranet product. The dust bag contained less dust from the Abranet disc, but it had also cleared less paint from the test piece.

**Angus Lafferty:** I was able to sand outside without the wind blowing dust everywhere. Indoors, I was able to sand without feeling the need to cover up furniture and remove curtains, etc. beforehand. I achieved a smooth



Keith Baxter found Mirka's claim of dust free sanding to be unconvincing judging by the amount of dust left behind





Jose Viveiros used a dedicated Mirka sanding system to get his results

finish which also removed cup rings, stains and other flaws in the hardwood windowsill and table I sanded for the test. I was both surprised and impressed that the dust was dealt with so efficiently. I would recommend it to other people as a better alternative to similar abrasives.

It is suitable for use indoors and doesn't require so much preparation before use.

**Dave Reilly:** A very easy product to use. I used it on a varnish stain on a floorboard. The 80 grit did not manage to get a good even finish, but gave a smooth finish. The 240 grit gave a great finish on plain untreated softwood. I would most definitely recommend the 120 and 240 grits for finishing work and the 180 grit works okay on a clear varnish.

**Jose Viveiros:** There was no dust and no clogging and it works for twice as long, if not longer.

### Editor's comment

The tester who applied the most thorough effort in testing, Keith Baxter, was also the most negative by far out of all our testers and we simply didn't have room to put in all his comments. Mirka concentrate on selling Abranet and Abranet Ace as they are their most successful abrasive products by far.

Personally, I've used both versions of Abranet and found them to be much more effective as an abrasive, that won't clog easily and extracts well through a hook-and-loop machine platen that has holes in it.

We still tend to refer to abrasive sheet as sandpaper and still

still seems to be the most commonly sold type in DIY stores with aluminium oxide papers sold to the trade. Despite Keith Baxter's well considered concerns regarding lack of good extraction and a tendency to clog both Abranet types are still superior to the more common varieties of abrasive and I think justify the cost.

Abranet Ace is designed for tough applications such as hardwoods and solid surface materials. You will need a reasonable variety of mesh grades for comprehensive results, whichever type you choose. ■



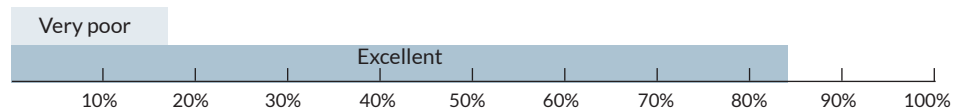
Angus Lafferty was impressed with the smoothness of finish on several projects

**Chris Murphy:** I think it will last a lot longer than normal paper, after quite a few goes the sheet still felt sharp. On some hard wood, it was scratch free.

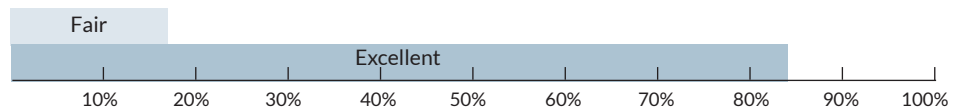
**David Child:** It extracted well after the extraction system was cleaned out. It lasts a lot longer than I expected it to

last! I was sanding down all the wood to make a picnic bench and I managed to do it all using one disc – normally I'd need at least about 10 conventional discs. The people I work with are interested in buying the product now, as it's done a very good job for what we do.

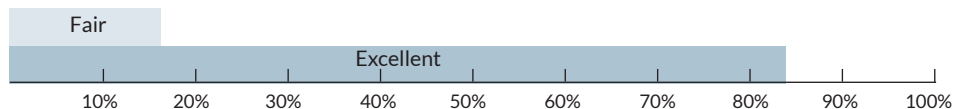
### How would you rate the product performance?



### How would you rate the product ease of use?



### How would you rate the product overall?



If you would like to be part of our panel of product testers, please go to our website – [www.woodworkersinsitute.com](http://www.woodworkersinsitute.com) – and SIGN UP NOW!



# Ask the Experts

This is your chance to challenge our Editors and for them to answer your comments and queries

## WORKING WITH OAK

“Hi Anthony, I bought some prepared oak (*Quercus robur*) recently. It wasn't the ideal size, in fact I had already decided to split it down the middle to end up with thin strips that would be more use. When I cut them on the bandsaw they went a bit curly, twisting out of shape and are now useless and I'll end up burning this stuff that cost me money. How do I stop that happening again? I'm a bit nervous about buying wood that might misbehave like this”

Nev Shelling, by email

**Anthony replies:** Nev, this is the basic stuff of dealing with a natural product like wood, especially timbers like oak. You may be familiar with the expression 'hearts of oak', which is taken to mean strong and reliable, but oak is actually quite wayward and capricious and easily 'springs' out of shape because of its internal grain structure. The way timber is tamed for beams in oak-framed buildings is to square off all four sides of a reasonable straight grained trunk. By doing this it evens out the stresses and keeps it in a state of equilibrium so it shouldn't develop a twist or bend.

However, once a trunk is sliced through-and-through on a bandmill or resaw, you then take your chances depending on where the board is in the stack. The top and bottom slices are more likely to 'cup' i.e. develop bowing in cross-section. The flattest boards should be the very middle slices, excepting the very middle of a board where it can develop a sort of



Splitting timber, like oak, down the middle often results in bowed pieces like these

peak and some splitting, so a waney edge board will normally be divided down the middle of the trunk to create two reasonably flat boards either side of the middle. As this process goes on, the aim is to tame the tree and produce flat square planed stock, which can then be used for cabinetwork and joinery, that is until you divide a perfectly prepared board down the middle of the edge and release the inherent tensions in the wood as you have done. The trouble is if you buy standard kiln dried timber it 'sets' the stresses in the board, which are then upset when you cut the board down in thickness.

If you can obtain air-dried waney-

edge boards that haven't been kilned, the timber will be much better behaved. You need to store the cut pieces in a dry, ventilated environment 'in stick' i.e. with sticks between to allow it to dry for some time until the right amount of moisture remains – roughly 8% for cabinetwork and 12% for joinery. You can make your own sealed dehumidification kiln using a domestic dehumidifier and a fan to circulate the air.

A cheap moisture meter allows you to check the water content of the timber as it is drying out. Yes, it's a bit of a game but then you can make more stable, workable timber like that.



A moisture meter will show the moisture content of wood during drying

**ANTHONY BAILEY**  
Editor, *Woodworking Crafts Magazine*



**MARK BAKER**  
Group Editor,  
GMC woodworking magazines



**DEREK JONES**  
Editor, *Furniture & Cabinetmaking Magazine*



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A dehumidifier cabinet is very easy to build and can be made to fit under a bench



## DIY FIXES

“ I've owned an ELU MOF 177E router for years, obviously, as they ceased to exist a long time ago. It's still a great router but the main bearing went at the bottom of the spindle, so rather than try to get it repaired because it was a) going to cost a lot and b) the repair company didn't seem happy to work on such an old machine, I thought I'd have a go myself. So, I found a bearings supplier who matched the bearing type, I rather cautiously took my precious vintage machine apart piece by piece. Top off, then bearing mounting, motor brushes, etc. and with the collet nut in place tapped out the spindle. I managed to knock out the old bearing and fit the new one. I switched it on with trepidation, but it worked! Well, for a while as I then did quite a bit of routing but it started sounding a bit 'graunchy' and running slightly slow and uneven. What have I managed to do wrong? Can it be sorted out and do I need to get it done professionally this time? Help! ”

Bob Tiltman

**Anthony replies:** Hi Bob, for a start, the only reason I'm publishing your query is as a warning to other readers about DIY fixes for powertools – that, and a useful explanation of the basics of how routers work.

I have replaced several bearings and switches on Elu MOF96 and MOF177E machines in the past and done it successfully. I do NOT advise readers to try messing with potentially quite dangerous electric tools unless they have previous professional experience doing this work. A router is very different from a power drill. It runs at very high speed so to be able to do this several things must be addressed. The main thing are the bearings which the spindle runs in. These are high speed bearings not ordinary ones. They are designed to cope with the stresses and heat of high speed running. The top bearing is smaller than the bottom one where the stresses are really exerted. Critically the large bottom bearing is sealed against dust and resin while keeping the special grease in place.

If your bearing was not rated for high speed or lacked a dust seal it would explain the failure. It's also worth



The inner workings of a router are complex



A proper high speed sealed router bearing

noting that high speed motors can only run smoothly if they are perfectly balanced, so just like balancing a car tyre by adding lead weights, such a motor has small nicks machined into the steel core to correct any imbalance. If you are determined to keep using your venerable ELU you should get it sorted by a professional repair company.



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## Things to do in November...



PHOTOGRAPH COURTESY OF WIKIPEDIA COMMONS

### Lewes Bonfire Night

#### Bonfire

It depends where in the country you like, but in many areas – especially in the South East – it is 'bonfire season' where Guys Fawkes orientated celebrations take place. Wood and brushwood have many uses, including waste that might go to the tip or be burnt in your garden. A lot of garden burnable waste could go to your local bonfire society so they may be glad of it for their big display burn-up. Flaming paraffin soaked torches need sturdy slim sticks, again you may have some to offer and maybe you could then join in and enjoy the spirit of the event. Incidentally, if you have your own backgarden bonfire, local authorities generally advise burning at dusk onwards to avoid upsetting neighbours with the smoke.

#### Time for the present

In this month's issue we show you how to make turned Christmas decorations, but of course you also need to consider whether you can make use of your woodworking skills to make friends and family some presents. Often these personal endeavours are much more appreciated than something shop bought especially if you explain some of the processes involved so they understand that you made some effort to create. Anything from wooden



A handmade present will be greatly appreciated



# Turned Christmas ornament



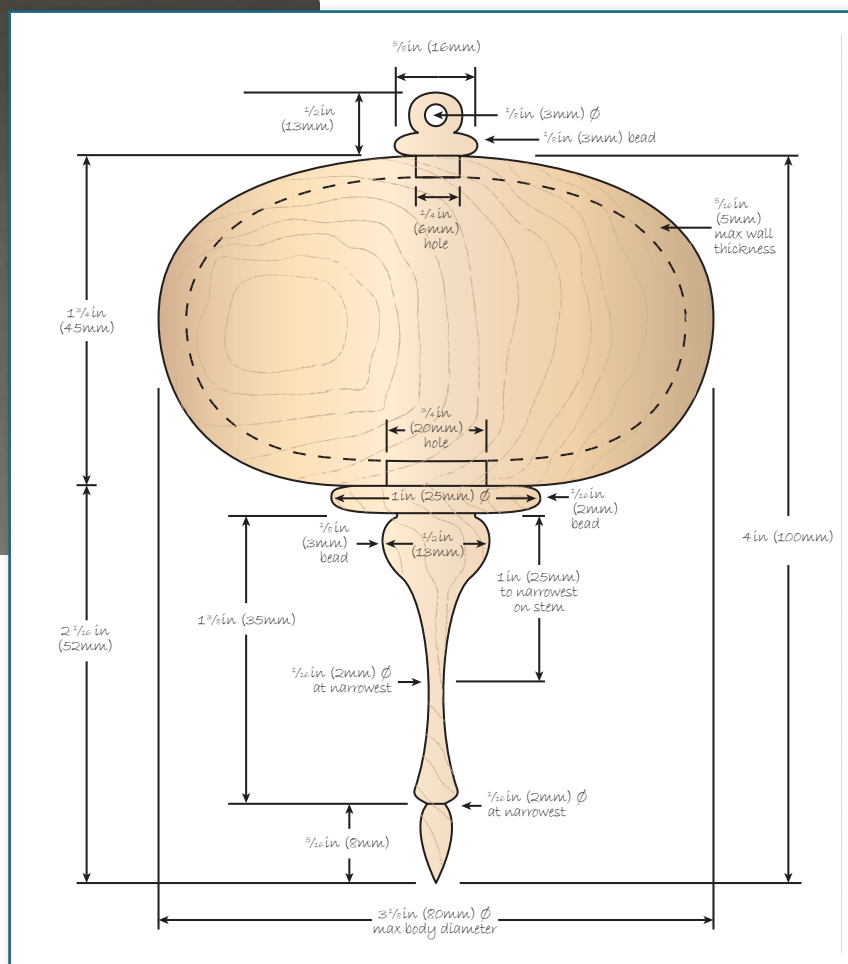
PHOTOGRAPHS BY GMC/ANTHONY BAILEY

## What you will need:

- Spindle roughing gouge
- Spindle gouge
- Beading and parting tool
- Thin parting tool
- Scraper with round or French-curve cutting edge
- Chuck
- Callipers
- Revolving centre
- Driver spur
- Duct tape
- Abrasives down to 400 grit
- Finish of your choice
- Line or wire to suspend ornament
- Drill with drill bit to suit line or wire used to suspend ornament
- Personal protective equipment (PPE): faceshield, dust mask and extraction

In this extract from *Weekend Woodturning Projects*, **Mark Baker** turns a stylish maple and African blackwood Christmas ornament

**M**ulticoloured baubles of every conceivable shape and size are widely available to buy, but it is a great idea to try making Christmas tree decorations yourself. This ornament is a wonderful way of using your turning skills in a different kind of project. If you use low-density wood such as softwoods, you could make thin icicles in one piece without them being too heavy. This is a form made in three parts and I am using rippled maple (*Acer saccharum*) for the body – a small hollow form – and African blackwood (*Dalbergia melanoxylon*) for the top for contrast and the lower icicle-like drop finial. Choose what woods you like and play around. There are so many shapes to go for.





**1** Let's start with the body. Mount between centres and create a cylinder, then cut a spigot one end.

**2** Use a spindle gouge to create the body shape you want. I chose a squat bead form. You can drill or use a spindle gouge to create a hole right through the piece, before opening up the hole near the tailstock to accommodate the bottom icicle-type drop finial. This is the hole you will be hollowing out through. Do not go too deep or the piece will not be stable for hollowing under the rim.

**3** You can effectively hollow out by sweeping the gouge from the centre out in a fan shape that, once done, is all you can do with the gouge. The downside of working through a small hole is you have to stop and clear out the shavings regularly.

**4** To achieve the shape required for this project, use either a shaped scraper or a scraper or cutting tool that allows you to reach around the shoulder. A swan-necked, articulated or swivel-tip scraper will do this. If you do not have one, just change the body shape so you can reach all the areas with a gouge or standard straight scraper. Whatever you use, adjust the opening shape to make sure you can move the tools to where you need to get to without hitting the side walls.

**5** The tool should be supported on the rest by the main shank of the tool and not by any other part. Angle the cutter to reach where you need to go and make gentle cuts above the centre line of the form and never below it.

**6** Once you have run the cutter around the inside and have an even wall thickness, use a beading and parting tool to reduce the waste on the chuck-side of the form.

**7** Now sand and apply a finish of your choice. Again, I used oil.

**8** Part off the work. No part of me is near the chuck so I am clear to hold the work gently while I part it off. Remember there is a hole running through the piece. Once parted off, clean up the upper end of the piece and apply your choice of finish. ➤





**9** The lower finial is a section of a timber of African blackwood from what is sold as a clarinet bell blank. One of these quadrants will do four complete projects like this for me.

**10** Being square, the thickest end can be gripped in the central section of your chuck jaws. The revolving centre can be brought up to support the piece while creating the taper. African blackwood takes excellent details but is dusty to use.

**11** Measure the opening of the widest hole.

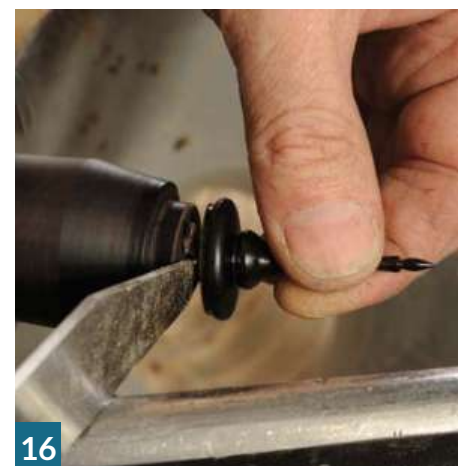
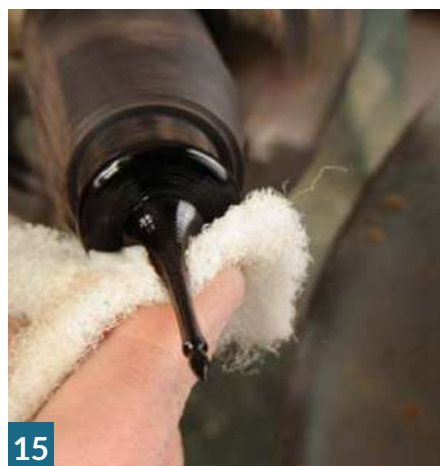
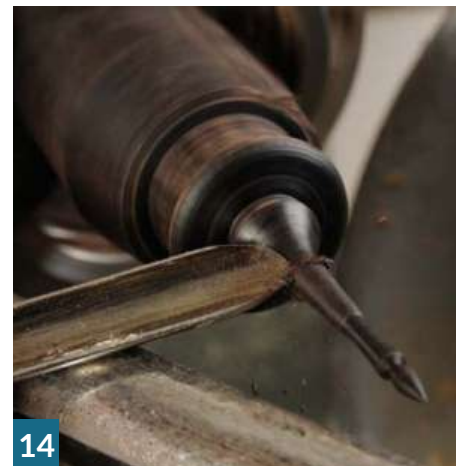
**12** Measure the overall length of the finial required then use the beading and parting tool to cut the spigot to the right diameter to suit the length previously measured. This now establishes the mating joint and also the overall length of the finial. Then use the spindle gouge to start shaping the finial.

**13** Use a spindle gouge to shape a partial bead on the part nearest the dimensioned spigot. Note how there is a wider section at the pointed side of that tenon. This will allow the tenon to fit in the hole and provide a shoulder that covers the hole as well as providing a nice detail. Now shape the tip end of this bead and then start to refine the finial shape, working from the very tip back to the bead.

**14** Blackwood cuts cleanly if a shearing or peeling cut is used. As with previous finials, create the main curve of the finial slowly and carefully, again the thinnest part is about one-third of the way down from the top. Near the shoulder the stem is rolled over to create a nice intersection with the beaded shoulder area. Once shaped, sand it.

**15** Apply your finish. Oil and paste wax was used in this case too. As before, apply only gentle pressure, then buff with paper towel.

**16** Now part off the piece through the tenon cut. You need to leave enough on the finial side to equal the wall thickness of the hollow form so it has as much glue area as possible to bond properly.





**17** Now try it for fit. You can see here how it should fit in position nicely. Check that the bead detail and shoulder work well visually.

**18** Now flip the hollow form over and measure the hole created when you pushed the drill or gouge horizontally into the wood. Now create another tenon on the blackwood held in the chuck, making it slightly bigger than the hole opening, and use a spindle gouge to cut a little ball on its front end.

**19** Once cut, drill a small hole horizontally in the centre of it. The hole only needs to be big enough for some fishing line or a ribbon to be passed through it.

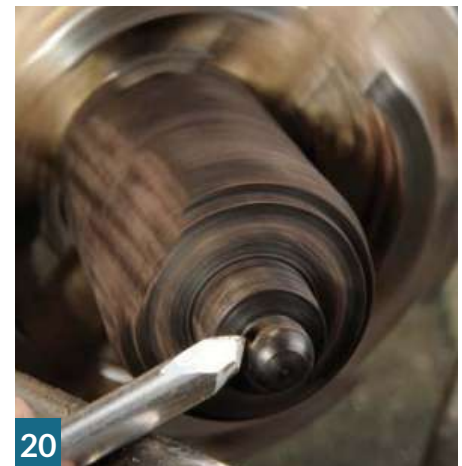
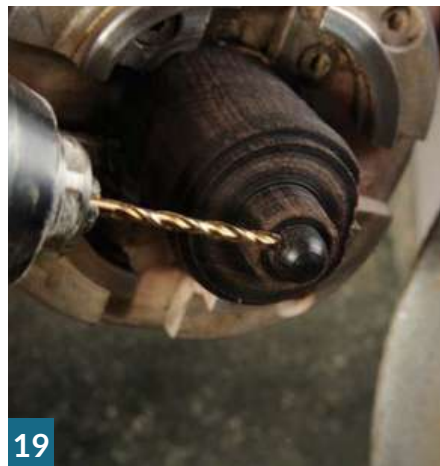
**20** Once drilled, refine the shape of the ball.

**21** Turn a bead form on the shoulder of that previously cut tenon, at the base of the ball. The forming tool works well for this, but a gouge or parting tool would do too.

**22** Now create a spigot of the right size to fit in the hole. You can see how callipers and a thin parting tool work well for this. The spigot needs to be overlong so you can part off the right length. The other thing is to undercut the top-most shoulder of the beaded part so this sits flush against the hollow form. Do not part it off yet.

**23** Now sand the piece carefully and then apply your finish. Buff it with paper towel, then part it off.

**24** Now glue the lower finial and upper button in place. ➤



### Hints & tips

- The grooves used for this hollow form could be replaced with coves, if you prefer. To achieve this, use the radius point of a small spindle gouge in trailing mode.

### Weekend Woodturning Projects

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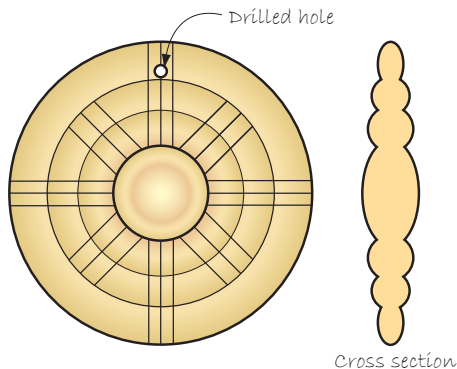
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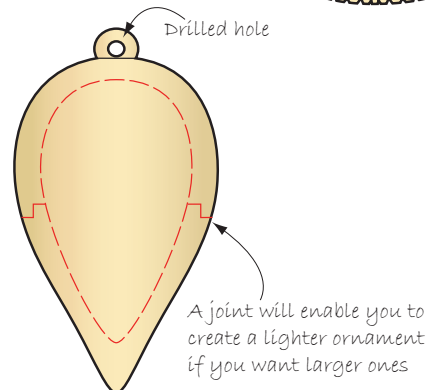
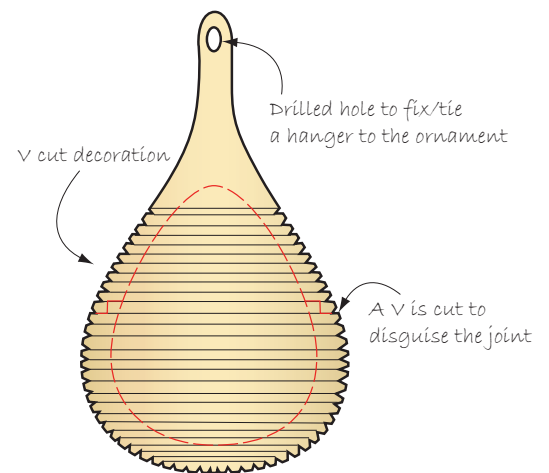
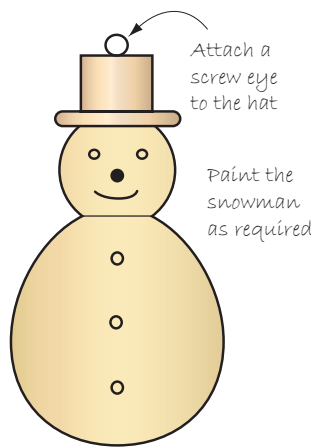


## Some alternative designs for you to consider...

This ornament can be a simple turned one or feature carved detail as well



The striations mark the position of V cuts made with a carving chisel





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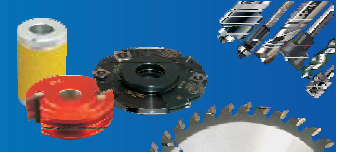
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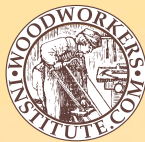
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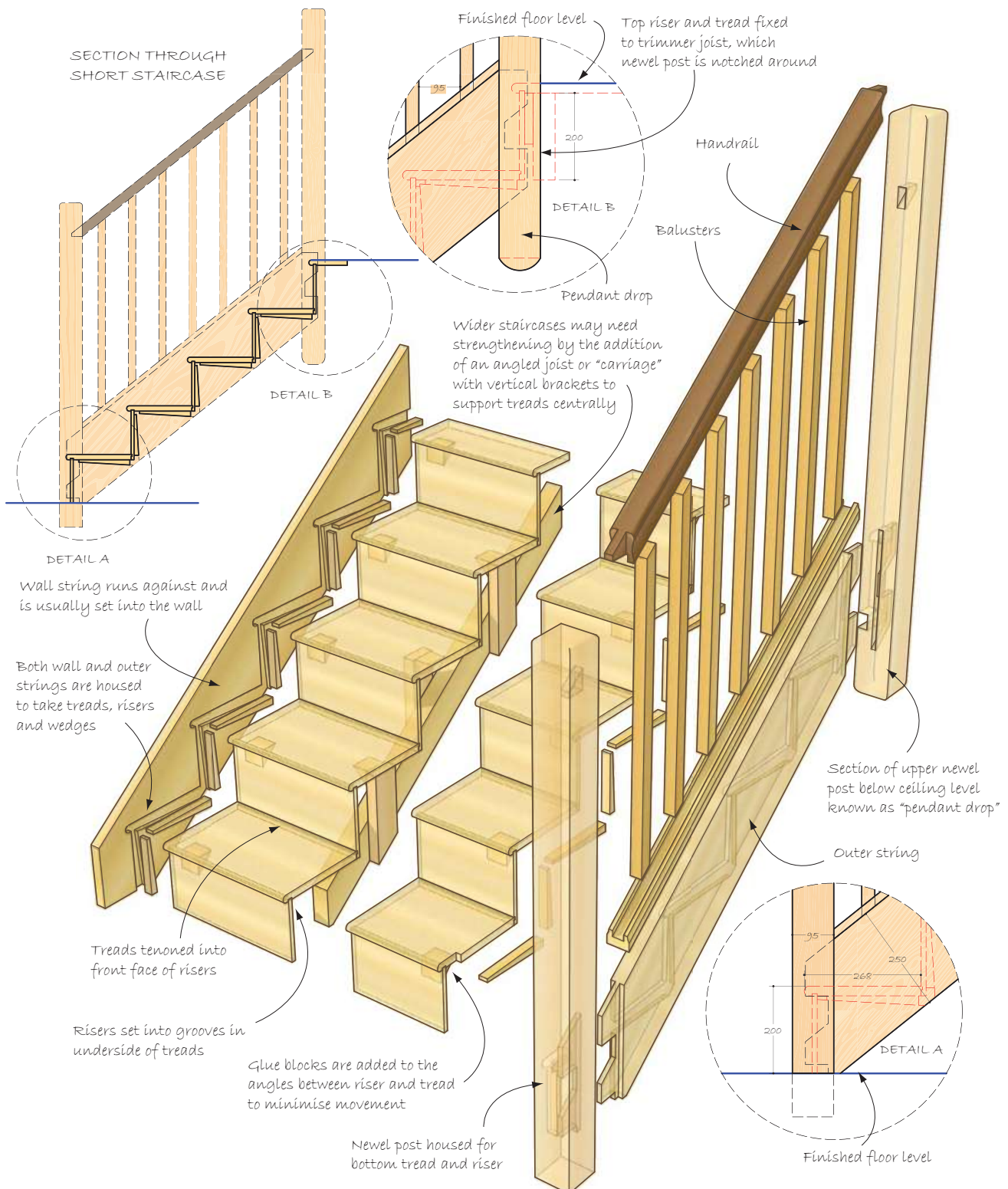


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